INDIAN MATERIA MEDICA

BY

K.M.NADKARNI

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THE

INDIAN MATERIA MEDICA

EDITED AND PUBLISHED BY

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London.
(Calcutta), please see

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A Few Extracts from Opinions on "Indian Plants and Drugs."

"Of great assistance to local native practitioners in India . . . A useful one made with intelligence . . ."—*Lancet*, London.

For opinion of "*Indian Medical Gazette*" (Calcutta), please see page V of the "Preface".

"A very useful guide for the study of the pharmacological value of Indian Drugs"—Col. R. Row, I. M. S., M. D. & D. Sc. (London).

"We wish to commend this work to our European professional brothers so that they might form some idea of the stupendous progress made in Medical science by the ancient Hindus. We must congratulate the author for bringing out such an useful work . . . would undoubtedly bring to the knowledge of people the vast amount of medicinal properties of drugs contained in ancient Sanskrit works on medicine."—*Medico-Surgical Journal*, Calcutta.

"This knowledge is another additional strength to the practitioner and also enables him to diagnose and treat successfully cases coming to him after a previous treatment by Vaidyans, Kavirajas, etc. . . . . It will surely find favour with the practitioner in India."—*Practical Medicine*, Delhi.

"I find it at once the best and the most convenient of its kind ever published. It contains a vast amount of useful information very elegantly arranged . . . I believe with the publication of this exhaustive book the hunting for information in relation to indigenous drugs often experienced by Doctors has ceased . . . . a work of such excellence and practical utility both to the physician and the layman alike."—Surgeon T. G. Sunder, Madras.

"It is a very useful book for professional and laymen as a family Medicine . . . . It was a desideratum and you have well fulfilled it."—Dr. Sir Bhalchandra Krishna, Bombay.

"A work which no Indian can glance over without being once more reminded of the fact that the science of healing had its birth and most promising early development in this country. What a world of information put together in such an admirable way as to enable the reader to put his finger at once on the thing he may be looking for is compressed in the compass of these 450 Octavo pages!"—*Amrita Bazaar Patrica*, Calcutta.

"At such a juncture like this, books like the one under review are thrice welcome; for, books on this subject are few and far between. We therefore congratulate Mr. Nadkarni on his valuable pioneer work . . . in a field where labourers are so few; and the amount of information condensed in these 470 Octavo pages is, without exaggeration, prodigi-

ous . . . We strongly commend this book to the public in general, and to the medical profession, in particular. No medical practitioner can afford to be without a copy"—*New India*, Madras.

"This book on which has been devoted much labour and trouble contains a mine of information for . . . especially the householder who can save Doctor's bills by having a copy of the book with him."—*W. C. Spectator*, Calicut.

"A valuable treatise on the subject it deals with and will be found highly useful not only by the medical profession but also by the lay public . . . The medical profession in India should feel grateful to Dr. Nadkarni for supplying so ably a real and long felt want."—*Hindustan Review.*

"The book covers all the possible resources of Indian therapeutics. To the busy medical practitioner the book ought to prove useful, containing as it does much valuable information in regard to a branch of medical knowledge in which few European students have done any research work"—*Madras Mail.*

"It clearly proves that India has no need to depend upon foreign supplies of drugs and medicines if (but these "ifs" are most discouraging) only our medical men shake off their indifference and recognising the gravity of the situation, they sincerely come forward to do their duty by their mother-land"—*Indu Prakash*, Bombay.

"The book is therefore indispensable to the Practitioner in India; without this the Practitioner's knowledge and strength in the management of his cases can never be complete since it serves him as a very powerful and efficient weapon in combating disease and ailment."—*Indian Patriot*, Madras.

"This valuable book ought to prove very helpful to the medical profession in general . . . "—*Hindu*, Madras.

"Thus on every page of the book we come upon reading matter both interesting and instructive. But the exigencies of space prevent us from diving further into what we have ound a decidedly fascinating ook."—*Madras Times.*

"The book may also help the profession in the prescription of diet and in the better diagnosis of patients treated by native physicians. . . . But beyond the Medical profession the general public too may find the book useful. . . . "—*Mahratta*, Poona.

"Very interesting book on the medicinal properties and uses of more than 400 Indian plants and drugs. . . . it reminds even a lay reader how many simple remedies lie round about him."—*Indian Spectator*, Bombay.

PREFACE.

Whenever a book is being introduced to the public it has become a custom to give the why and wherefore of it. Accordingly I have to state briefly the causes and circumstances that led to the preparation and publication of this little work on the indigenous drugs of India and also to state my case, as many of my old readers might have the curiosity to know, how I was converted since the last twenty years from publishing books on clinical diagnosis and treatment of diseases according to the Western system of Medicine and with the use of drugs and preparations of the British Pharmacopoeia, into editing and publishing books dealing with the properties and uses of Indian drugs and remedies.

It was exactly 18 years ago that my book "*Indian Plants and Drugs*, with their Medical Properties and Uses" was published. In the "Preface" thereto I had mentioned that my aim and object in publishing it was to serve not merely the medical, but also the non-medical educated public by introducing to them, especially to the former the numerous cheap and efficacious medicines and foods of indigenous origin so that they might employ them in their practice, and to the latter (*i.e.*, the non-medical educated public who are removed far from efficient medical aid) the large number of simple remedial drugs, herbs, fruits and vegetables, procurable at the mere cost of collection from road-sides or gardens, or obtainable at a nominal price in the Indian bazaars. But I had not mentioned therein the circumstances that led to a sudden change in my mind from publishing revised and up-to-date editions of my former books *viz.*, the "Essentials of Modern Treatment of Diseases" and the "Practitioner's Clinical Referee" for

which I had made all the preliminary preparations and for which there had been an extensive and continuous demand for some years previously since the entire exhaustion of their first editions, and which impelled me towards the preparation of the book *Indian Plants and Drugs*. They were the strong spirit of *Swadeshism* suddenly evoked in me by the wave of *Swadeshi* spirit that swept over Bengal during the days of the Bengal Partition, the deep sense of the glaring evidence of the chronic grinding poverty all around us and the annual loss of nearly two crores of rupees to India for importing costly foreign medicines. These were the main factors that actuated me to prepare the book "*Indian Plants and Drugs*", which was published about the end of 1908. But, within a short time after the publication, *i.e.*, soon after the Partition was revoked, the *Swadeshi* spirit excited by it in Bengal rapidly passed off. As a result thereof the large edition of the book printed with the sole object of popularising the valuable indigenous drugs among the Medical profession and the educated classes of India with the aid of the patriotic spirit created in Bengal and which was likely to spread throughout the country was like a burden upon me; and it took me a number of years of stress and struggle to exhaust the edition by sale owing to the utter lack of patriotic spirit in the country. Yet, meanwhile the book did not fail to earn unstinted and unsolicited praise and welcome from the high-class Indian Press, both Medical and Lay, as well as from eminent Medical men—official and non-official. The late lamented Sir Charles Pardey Lukis, the then Director-General of the Indian Medical Services, not only ordered all the Government Medical Stores under his control to supply themselves with copies of the book, but also advised us to apply to the Provincial Surgeons-General so that they might recommend the purchase of

copies for the use of Medical Officers attached to the Hospitals and Dispensaries under their control. But, our applications to them met with no favourable response : we received the usual excuses and evasive replies generally obtained from Heads of Administrative Departments of Governments in cases where Indian-made things are seeking their patronage. While even the Revenue, Salt and Forest Departments of Madras had purchased copies of the book for use in their offices in the Presidency, none of the Heads of the Provincial Medical Departments in India patronised the book although it was specially intended for the use of Medical men in India.

Among the Universities, as far as I came to know, only two, *viz.*, the Allahabad and the Lucknow Universities had the courage and the patriotism to prescribe the book as a co-text with the British Materia Medica for the students preparing for the M. B. degree examination. The sad want of patriotic spirit particularly among the Indian Medical Profession in general was the cause of failure of the other and older Universities to recognise the importance of giving to their Medical alumni the benefit of the knowledge of the properties and uses of the Indian drugs along with those of the foreign ones.

But, about the end of 1919 (the year of the advent of the "Reforms") the demand for the book from all sides became so great that I thought it necessary to increase the price (which had been kept purposely so low as Rs. 4 with the object of popularising the book) to Rs. 6 per copy in order to prevent the small stock then remaining from running out long before the printing of the second edition, for which preparations were being made ; and even at this price the few hundred copies left unsold were speedily exhausted within a few months, and some last copies were sold even at Rs. 7 each.

But, unfortunately owing to a series of domestic calamities, the mental dejection caused by the shock, the fear of the disappointments and difficulties encountered in regard to the sale of the last edition, the greatly enhanced prices of paper and printing since the war, and the natural infirmities due to my advanced age, I thought myself incapable of undertaking the laborious task of preparing a revised, improved and up-to-date manual on Indian drugs. But about the end of 1924, considering the interest recently taken by some members of the Legislative Councils and the Assembly since the inauguration of the "Reforms" and also those of the Municipalities, Local Boards, etc., in favour of investigating and encouraging Indigenous Systems of Medicine, and considering the long and sorely felt want now-a-days of a handy manual treating of indigenous drugs on the lines of British Materia Medica, as proved by the wide-spread and persistent demand for my old book, many offering double and treble the price for a copy and encouraged by my sons, particularly the younger (A. K. Nadkarni) who volunteered his whole-time clerical service as well as the out-door work of collecting literature from places like Libraries, Colleges, Scientific Institutions, etc., and also from eminent Scientists, Scholars and Doctors, local and moffusil, for my consultation in preparing Mss. for the Press, I took upon me the work of this Treatise and titled it as "*Indian Materia Medica*" with the hope that it may go side by side with a British Materia Medica, as a companion volume among the Medical students and members of the Indian Medical Profession.

The fact of the great cheapness and efficacy of Indian drugs has been repeatedly admitted by eminent British Medical Authorities. For instance, Col. G. T. Birdwood, M.A., M.D., I.M.S., speaking of Indian drugs in his book "Practical Bazaar Medicines" says—"There is no ques-

tion that bazaar medicines are much cheaper. A bottle of European medicine costs As. 8 to Rs. 2 while a bazaar medicine costs a few pice. District Board Dispensaries can give a vast amount of medical relief at very little cost if bazaar medicines are intelligently and largely used. Even in such epidemics as influenza, plague, cholera, and relapsing fever, bazaar drugs can give much relief". Continuing he seems to complain and says :—" At the big Medical Schools attached to our big hospitals, in the course on Materia Medica, Indian plants and drugs receive attention, but in the wards of the big hospitals, which Institutions have an ample supply of European drugs, bazaar medicines are practically never prescribed, so that men leave the medical schools with little practical knowledge of prescribing bazaar medicines." In another part, in connection with the same subject he says :—" If a medical man has a good knowledge of these (bazaar medicines) he can treat many minor maladies and relieve much suffering at a very little cost. It must be remembered that a great many of the maladies of every-day life, for which people come as out-patients to dispensaries, are of a minor nature, as coughs, colds, indigestion, ulcers, sore eyes, sore throats, worms. Bazaar medicines intelligently used have a sufficiently practical and wide enough range to meet most of the maladies." Lt. Col. Harold Brown, I.M.S., (Retd.) stated that "there are a great many indigenons drugs of extreme utility, but little known to students of Western Medicine." In the course of a review of my book " Indian Plants and Drugs " the *Indian Medical Gazette* said many years ago :—"As regards the greater uses of indigenous drugs we think the tendency of Indian practitioners is quite the other way. They are too much inclined to run after the latest drug or new poison cleverly advertised by pushing German and American (I would add here " and other foreign ") firms of drug manufacturers and

if this book will help to drag the Indian practitioner from seeking out and using new synthetical preparations with fancy names and persuade him to go back to the numerous useful drugs of his own country it will be of great use and value."

Under the circumstances what a boon the Medical Practitioners can confer on their patients, especially of the poor and middle classes if they will only *intelligently* employ simple and efficacious bazaar medicines, in other words, Indian remedies (hundreds of which are to be met with in the pages of this book) in place of costly foreign medicines! And what a saving an intelligent householder will make in his expense, time, trouble and anxiety, if he will have a little more of self-reliance and a little less of the feeling of helplessness in cases of minor complaints of everyday occurrence and *with discretion*, will make use of the numerous, simple, harmless, home-remedies given in this book! It is a well-known fact that pure fresh vegetable drugs are more powerful in their efficacy than those which have undergone various Laboratory processes for their preservation and preparation according to western methods. Moreover the extraction of alkaloids by the use of alcohol, etc., is said by Ayurvedists to destroy the actual and intrinsic therapeutic activities of the drugs.

These were the considerations that strongly animated me throughout during the preparation of this manual. Besides the two crores of rupees which cost to our country year after year for the purpose of importing foreign drugs and preparations, five to six times that amount is being exacted as compounding charges from poor and middle classes who, though unable to pay are compelled to do under the conditions prevailing at present in this country.

In Appendix III I have given a list of "Substitutes for imported Foreign drugs" which can be used in lieu of the foreign ones. To Indians who are brought up on Indian food, soil and climate with Indian habits of life, temperament and environment, Indian drugs naturally suit better and are safer than European medicines which are prepared mainly to suit European constitutions built up on their peculiar food, climate, habits and manners of life. This may perhaps be the reason why, in numerous cases where Allopathic treatment fails, indigenous systems of medication succeed.

In the description of drugs and their preparations I have also mentioned important Ayurvedic and Unani preparations, their composition or mode of preparation, uses and doses, and in Appendix VI has been given a description of the principal forms and methods in which Ayurvedic medicines are prepared for uses, external and internal. Because, these are the preparations in common use in India among Kavirajas and Vaids. About the good effects of Ayurvedic treatment a host of distinguished and experienced Anglo-Indian and Indian medical men trained in the western system of medicine, not to say several European and American Doctors, have spoken highly. To quote a few, the late Sir Charles Pardey Lukis speaking in the Imperial Legislative Council, March 1916, said :—"I resent strongly the spirit of trade unionism which leads many modern doctors to stigmatise all Vaids and Hakims as quacks and charlatans. I shall always be proud of the fact that I was privileged to have the friendship of two such trained men as Nawab Shafa-ud-doula of Fyzabad and Mahamahopadhyaya Bijayratna Sen of Calcutta." Speaking on different occasions on Ayurveda he said as follows :— "We (Allopaths) are just emerging from the slough of empiricism. Personally I would frankly say that if I were ill, I would

prefer to be treated by a good vaid or hakim than by a bad doctor". He added—"I am not alone in my opinion as regards the value of the indigenous system of medicine. If I err I do so in good company amongst whom I may mention my friend and former colleague Sir Havelock Charles, Col. King of Madras and Dr. Turner of Bombay". Also he is reported to have stated thus :—"The longer I live in India, the more intimate my connection with Indians, the greater will be my appreciation of the wisdom of the ancients and the more I will learn that the West has still much to learn from the East"—(*British Medical Journal*, Oct. 1918). On another occasion he is stated to have said :—"The longer I remain in India and the more I see the country and the people, the more convinced I am that many of the empirical methods of treatment adopted by the Vaids and Hakims are of the greatest value and there is no doubt whatever that their ancestors knew ages ago many things which are now-a-days being brought forward as new discoveries." He has also said on another occasion that "those trained in the western system should learn to unravel the mysteries of the indigenous system and unearth its hidden treasures. The truths contained in them should be studied". The *Indian Medical Gazette* Nov. 1924, says:— "It (Ayurvedic) and not Western Medicine is the medicine of the (Indian) people"; and the *British Medical Journal*, Sept. 15th 1924 stated–"the native practitioners perform a useful service in the villages more especially in the medical side of practice". Dr. Geo. E. Clarke, M. A., M. D., Philadelphia, writes :—"I would rather trust ancient Hindu practice than the allopathic practice of what we are wont to learn in this enlightened age. If the physicians of the present day would drop from the Pharmacopoeia all the modern drugs and chemicals, and treat their patients according to the method of Charaka, there would be less work for the

undertakers and few chronic invalids in the world". Such is the efficacy of Ayurveda acknowledged even by the western eminent and experienced physicians. As regards its popularity even among wealthy classes, Sir Patrick Hehir admits it (*Times Educational Supplement*) and states that " some of the leaders of pure Ayurvedic practice make considerable fortunes out of their calling and when consulted in up-country cases from the large towns, charge heavy fees". Leading Ayurvedic physicians in urban areas " command princely fees in attending Princes, noblemen and rich people in cases where Allopathy fails ".

Any number of such recommendations and opinions in favour of the Ayurvedic treatment from famous European and American doctors may be quoted : but the above is enough to convince even the hardened sceptic about the popularity and efficacy of the Ayurvedic system of medicine. Ayurvedic or indigenous form of treatment is resorted to by the mass of Indian population. Progressive Indian States have given an impetus to the Indigenous Systems of Medicine. If only the Medical practitioners in India who are well-trained in the Western Science of Medicine, take some interest in the use of reputed indigenous remedies or medication in their practice, they will do a world of good to the poor suffering millions in India. To give them all the facilities of knowledge and information in this matter I have spared no endeavour, as will be evident from the contents of this book.

Many Indian fruits, grains and vegetables employed as useful dietetic articles have been treated in order to facilitate the study of Indian dietetics, which forms a chief factor in the cure of diseases, as well as the preservation of health and good nutrition. Indian dieto-therapy is as valuable as its medico-therapy and both combined are preferable to foreign drug-therapy in case of Indian patients.

To awaken and sustain an interest among the Medical students of the Western System in the indigenous drugs and remedies, I have set apart 101 copies out of this edition for presentation to those who top the list of successful students in the examinations in the Materia Medica subject in the various Medical Colleges and Schools in India.

In the preparation of this book I have consulted many Works on Ayurvedic or Hindu Medicine and those treating of the properties and uses of Indian drugs or Bazaar medicines and medicinal plants of India, in the shape of books, brochures, periodicals, Govt. Reports, Researches, Theses, etc., which are too numerous to mention here; to the authors of all these I acknowledge my indebtedness. I have also to express my grateful thanks to several local and mofussil Doctors and Scientific Scholars who had so kindly lent to my younger son (A. K. Nadkarni) books, magazines, theses etc., for my reference.

The botanical description of drugs is omitted, as the Indian drugs are distinguished in India not by referring to their complicated distinguishing characteristics but by their well-known names in important vernaculars, their general appearance, smell and taste. I have, however, given a separate Chapter (Appendix VIII) in which are mentioned the distinguishing general characters of the drugs belonging to important Genera or Natural Orders, together with a few typical examples of well-known drugs in order that the reader might become familiar with their distinguishing features.

Before concluding I have to seek the generous indulgence of the reader to overlook the printer's devils or typographical blunders that must have crept into this book, in spite of my careful scrutiny.

BOMBAY,
December 1926. K. M. Nadkarni

INTRODUCTION.

In order to understand fully the description of drugs, it is necessary to know the meaning of the words repeatedly occurring therein such as those signifying the *Doshas* :— *Vayu, Pitta* & *Kapha*, or those indicating weights and measures, Dosage, Time of administration, or those relating to the synonyms of drugs in the various languages.

Tridosha Theory.

Vayu, Pitta and *Kapha* are said to form what constitutes the tripod on which Ayurveda stands. To understand its theory perfectly and correctly is by itself a long and arduous study. The subject being a very complicated one, it cannot be explained within the compass of a few pages. Also, it has been defined by different experts in different ways; but the basic principles to which they all point to, are the same. They, as expounded by one of the foremost Ayurvedists of the present day, are as follow:— Mahamahopadhyaya Kaviraj Gananath Sen Saraswati, M. A., L. M. S., of Calcutta, says that the theory of *Vayu, Pitta* and *Kapha* "begins where modern Physiology ends; for it endeavours to explain all the physiological processes as also the principles which guide them. It is too elaborate a subject to be described here fully. I may refer you to the following concise statement contained in my Benares Hindu University address on "Hindu Medicine," to give you a rough idea of the theory."

"The theory of *Vayu, Pitta* and *Kapha* was also a great discovery, which unfortunately has been much misunderstood by Western Scholars judging by the wrong mercenary tran-

sactions, rendering these terms as 'Wind, Bile and Phlegm.' The proper explanation of this theory will take up a treatise by itself, but let me observe here in passing that the word *Vayu*, does not imply 'Wind' in Ayurvedic literature, but comprehends all the phenomena which come under the functions of the Central and Sympathetic Nervous Systems; that the word *Pitta* does not essentially mean "Bile" but signifies the functions of Thermogenesis or heat production and metabolism, comprehending in its scope the process of digestion, coloration of blood and formation of various secretions and excretions which are either the means or the ends of tissue-combustion, and that the word *Kapha* does not mean Phlegm but is used primarily to imply the functions of Thermo-taxis or heat-regulation and secondarily formation of the various preservative fluids, *e. g.*, Mucus, Synovia, etc., though the crude products of *Pitta* and *Kapha* have also been sometimes called by these names. We regret, we cannot do justice to this subject here for want of space but we hope the above would give a clue to the student who means really to investigate. It must be remembered that the theory of *Vayu*, *Pitta* and *Kapha* is not the same as the old exploded humoural theory of the Greek and Roman Physicians who, though they borrowed the idea from Ayurveda, failed to grasp the true meaning of the theory. I am convinced that the truth and value of the Ayurvedic theory can be verified. It affords sensible explanations of certain otherwise inexplicable facts in the causation and amelioration of diseases and their symptoms. It can also guide you in understanding the laws of general Therapeutics which it would be much to the advantage of any medical man to learn. I dare say that studying the subject with an open mind, he will be converted to believe in the theory. As we find in daily practice, even the half-

educated Ayurvedic Physician who remembers the laws of Aetiology and Therapeutics and dietary hinging upon this theory fares pretty well by the bed-side of the patient".

" To be more explicit, I may add that these principles, known as *Vayu*, *Pitta* and *Kapha* occur in two forms":—

"(1) An invisible or essential form, which mainly guide the physiological processes pertaining to them severally, and (2) A crude or visible form, the products (as secretions or excretions) of those processes induced by these essential forms."

" The relation between the two forms is very close, so that the derangement of the essential form of one principle gives rise at once to increased or morbid secretions and excretions of that principle. The failure to recognize the difference between these two forms of the principles has given rise to the erroneous rendering of *Pitta* as 'Bile' and *Kapha* as 'Phlegm'. The rendering of Vayu as 'Wind' is preposterous and has brought unmerited obloquy on the theory (vide my Sanskrit work 'Siddhanta Nidanam' Chapter I for a full exposition of this subject)".— *Report on the Indigenous Systems of Medicine, Madras, Part II.*

Indian & English Weights & Measures.

In ancient times the scale of weights and measures differed in different parts of India. Four separate scales are mentioned by modern compilers. These are Charaka, Susruta, Magadhi and Kalinga. In all the scales, *Gunja* or a seed of *Abrus precatorius* is generally the lowest weight. It is sometimes subdivided. Thus eighteen mustard seeds, four grains of paddy, three grains of barley and two grains

of wheat are, respectively, said to be equal to one *Gunja*. The scale at present in use in Bengal is as follows:—

6 *Gunjás*	...	*make one*	*A'ná*
2 *A'nas or 12 Gunjás*	...	"	*Máshá*
8 *Máshás or 16 A'nas*	...	"	*Tola*
2 *Tolas*	...	"	*Karsha*
4 *Karshas or 8 Tolás*	...	"	*Pala*
4 *Palas*	...	"	*Kurava*
8 *Palas or 64 Tolás*	...	"	*Seer or Sarava*
2 *Seers*	...	"	*Prastha*
8 *Seers*	...	"	*Adhaka or Pátra*
32 *Seers or 4 Adhakas*	...	"	*Drona*
100 *Palas or 12½ Seers*	...	"	*Tulá*

It should be noted that liquids, like solids, are measured by weights.

There is one peculiarity about liquid measures which should be noticed. When one *Prastha* or more of a liquid is directed to be used in the preparation of a medicine, double the quantity is actually taken. Thus if it is stated in any text that of solid drugs take one seer, of oil take two seers, of milk take three seers, and of water take four seers, the measures to be actually taken are one seer of solids, four seers of oil, six seers of milk, and eight seers of water. For measures below a *Prastha* or two seers, the quantities of liquid are not doubled.—(N. N. Sen Gupta's Ayurvedic System of Medicine).

"The *Unit* of weight in this country is the *Tola*, which is equivalent to 180 grains of the British Pharmacopœia—being the weight of a rupee of the present currency.

Half a tola = 90 grains = the weight of a half silver rupee of the present currency.

One Sikki = A quarter tola = 45 grains = the weight of a quarter silver rupee of the present currency.

One *Rati* is the weight of a *Gunja*, which is the seed of *Abrus Precatorius.*

1	Dhan is one grain of Paddy.		
4	Dhans	=	One Rati.
6	Ratis	=	One anna.
16	Annas	=	One Tola.
	Also		
4	Dhans	=	One Rati.
8 / 8	Ratis or / Gunjas	=	One Masha or 15 grains.
12	Mashas	=	One Tola or 180 grains.
5	Tolas	=	One Chittack.
16	Chittacks	=	One Seer.
1	Gunja	=	$1\frac{7}{8}$ grains.
3	Gunjas	=	1 Val.
$2\frac{1}{2}$	Tolas	=	1 Ounce.

Measures of weight of the British Pharmacopœia.

1	grain	=	grain (i)
437·5	grains	=	one ounce (oz. i)
16	ounces	=	one pound (lb.)

The Scruple (=20 grains) is rarely used now-a-days; the dram or drachm (=60 grains) is commonly used, but it is not official.

Measures of capacity of the British Pharmacopœia.

One minim	=	m. i
60 minims	=	One fluid-drachm.
8 Fluid drachms	=	One fluid ounce.
20 Fluid ounces	=	One pint (O.i)
8 Pints	=	One gallon (C).

Domestic Measures.

One Tea-spoonful is about one fluid drachm.

One Dessert-spoonful is about two fluid drachms.

One Table-spoonful is about half a fluid ounce.

One Wine-Glassful is about one and a half to two fluid ounces.

One Tea-Cupful is about five fluid ounces.

One Tumblerful is about ten fluid ounces.

Caution :—The spoon must be of the measure of about 1 fluid drachm.

A 'Drop' is generally taken to represent one *minim* ; but drops differ very much in size : therefore they should never be used as a measure of powerful drugs.

Dosage.

The doses of medicines are not fixed. They are regulated by the age, sex, strength, body-weight, mental emotions, and digestive power of the patient, the nature of the illness, the state of the viscera and humours, and lastly by the properties of individual drugs.

Supposing the full dose of a medicine for adults to be two tolas, the doses for children of different ages would be as follows :—For infants a month old, 1 *gunja*, and an additional *gunja* for each additional month. For children a year old, the dose would be one *masha* or twelve *gunjas*, and an additional *mash* for every year, till the full dose of sixteen *mashas* or two tolas is reached at the sixteenth year. From sixteen to sixty the full dose should be used, after which it should again be gradually reduced. When infants are unable to take decoctions and other bulky medici-

nes, their nurses are made to take them. Sometimes smal quantities of medicines are applied to the nipples, and the infants made to suck them.

Time of Administration.

Medicines may be administered during four periods of the day, *viz.*, sunrise, mid-day, evening and night. Sometimes they are administered frequently. Morning is regarded as the best time for administering such medicines as purgatives, emetics, decoctions and pills which are generally given once daily. When no specific direction is given regarding the time of administration, morning must be taken for granted. Very often one sort of medicine is given in the morning and another in the afternoon. Some medicines for dyspepsia are given before, along with, and after meals.—*U. C. Dutt's "Materia Medica of the Hindus."*

The abbreviated languages explained in full.

Afg. or Afghan.-Afghanistan., *Ajmere.*, Arab.-Arabic., Assam.-Assamese., *Bazaar.*, *Beas.*, Ben.-Bengali., *Berar.*, Butan.-Bhutanese., Bokh.-Bokhara., Bom.-Bombay., Burm. or Burma.-Burmese., Can.-Canarese., Cash.-Cashmiri., *Chanda.*, Chin. or China.-Chinese., *Chittgong.*, *Chota Nagpur.*, Cing.-Cingalese., *Concan.*, *Coorg.*, *C. P.*-Centrall Provinces., Cutch.-Cutchi., Duk.-Dukhhini or Dukni., *East Indian.*, *Eastern Terai.*, Eng.-English., Fr.-French., *Garo.*, Ger.-German. *Gharwal.*, Goa.-Goanese., Gond.-Gondal or Gondalese., Gr.-Greek., Guj. or Guz.-Gujarathi., *Himalayas.*, Hind.-Hindi or Hindustani., Ind. or Ind. Bazar.-Indian Bazaar., Ind. Vern.-Indian Vernaculars., Ital.-Italian.. Jap. or Japan.-Japanese , *Jaspur.* Java.-Javanese., *Jhelum (basin)*, Kan.-Kanarese or Canarese., Kash.-Kashmiri or Cashmiri., Kon.-Konkani., *Koncan.*, Kumaon.-Kumaonese., Lat.-Latin., *L. Burma*-Lower Burma., Lepcha. *Madras.*, Mah.-Mahra-

thi., *Mahableshwar.*, Mal.-Malayali., Malay.-Malayese. *Manipur.*, *Merwara.*, *Monghyr.*, *Moor.*, *Mysore.*-Mysorian., Nepal.-Nepalese., *N.W.P.*-North West Provinces., *Oudh.*, *Paharia.*, *Pangi.*, *Patna.*, Pers.-Persian., *Porbunder.*, Port.-Portuguese., Punj.-Punjabi., Pustu or Pushtoo (language of Afghanistan)., Raj. or Rajput.-Rajputani., *Ravi.*, Sans.-Sanskrit., Sant. or Santal-Santalese., *Seoni.*, *Sikkim.*, Sind.-Sindhi., *Singbhum.*, South Ind.-South Indian., *Sunderbans.*, *Sutlej.*, *Syria.*-Syrian., Tam.-Tamil., Tel.-Telugu., *Thana Dt.*-Thana District., Thibet.-Thibetan., *Tirhut.*, Tulu., *U.Burma.*-Upper Burma., *Udaipur.*, *U.P.*-United Provinces., Urdu., Uriya., Vern. or Ver.-Vernaculars.

N.B.—In the above, words in italics invariably stand for the District or Provincial names.

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THE
INDIAN MATERIA MEDICA.

(VEGETABLE KINGDOM.)

1. ABELMOSCHUS ESCULANTUS

(*N. O.*—MALVACEÆ.)

Sans.—Tindisha, Pitali, Gandhamula. *Eng.*—The Edible Hibiscus, Ladies' fingers, Okra. *Hind.*—Bendi, Ramturai. *Duk. and Punj.*—Bhandi. *Ben.*—Dheras. *Mah.*—Bhenda. *Guj.*—Bhinda *Pers.*—Babniyah. *Tel.*—Bendakaya. *Tam.*—Vendaikkay. *Mal.*—Venda. *Can.*—Bendekayi. *Cing.*—Bandaka. *Burm*—Youn-padi-si. *Malay.*—J. Kachang-lindir.

Habitat.—This is naturalised in all tropical countries.

Parts Used.—The immature capsules and ripe seeds or unripe fruit.

Constituents.—Fresh capsules abound in a copious bland viscid mucilage which consists of pectin and starch. Dried fruits yield 2 to 2·4 per cent. nitrogen and also salts of potash, lime and magnesia.

Action.—Emollient, demulcent, diuretic, cooling and aphrodisiac.

Preparations.—Decoction, prepared by boiling three ounces of the fresh capsules cut transversely in a pint and a half of water for twenty minutes, straining

and sweetening to taste; Mucilage and Poultice of bruised seeds, which contain phosphoric acid.

Uses.—It is most serviceable in fevers, catarrhal attacks, irritable states of the genito-urinary organs. such as dysuria, gonorrhœa, leucorrhœa and in all cases attended with scalding, pain and difficulty in passing urine. In dysentery, especially in the chronic form, the bland mucilage is often most beneficial. It is generally given in the form of soup. The mucilage is considered to have aphrodisiac effect. The tender pods are eaten in cases of spermatorrhœa. The mucilage from the fruit and seeds or the fresh bruised capsules form an efficient, emollient poultice.

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2. ABIES WEBBIANA.

(*N. O.* CONIFERÆ)

Sans.—Talisapatram; Manduparani. *Eng.*—Himalayan Silver Fir. *Hind and Ben.*—Talispatra. *Tel., Tam. and Can.*—Talispatri. *Mal.*—Taleesapatram. *Bom.*—Barami

Habitat.—This lofty fir is widely distributed on the higher ranges of the Himalayas

Parts Used.—Leaves.

Constituents.—A crystalline alkaloid known as *taxine*.

Action.—Antispasmodic and Expectorant.

Preparations.—Tincture, Infusion, Powder and Confection.

Uses.—*Tincture* (1 in 8) in doses of half to one drachm or Infusion (1 in 20) in doses of 4 to 12 drachms, of the dried terebinthinous leaves are useful in cases of cough, phthisis, asthma, bronchitis and catarrh of the

bladder. The *juice of the fresh leaves* is administered in fevers of infants during dentition and also in affections of the chest, the dose being 5 to 10 drops in water or mother's milk. In Bengal the juice is administered as a tonic in cases of parturition. *Powder of the leaves* in doses of half to one drachm is given with the juice of *Adhatoda Vasica* and honey in cough, asthma and hæmoptysis. A confection called *Talisadya Churna* is prepared with *Talispatra*, black pepper, long-pepper, ginger, bamboo-manna, cardamoms, cinnamon and sugar and is used in cough, asthma and hæmoptysis (Sarangadhara). Dose :—20 to 40 grains with water. This powder increases appetite, aids digestion, stops vomiting and diarrhœa, allays cough and dyspepsia and corrects flatulence. It is also given in enlarged spleen with success.

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3. ABROMA AUGUSTA
or A. Fastuosum.
(N. O.—STERCULEACEÆ).

Bom.—Olaktambol. *Ben.*—Ulutkambal. *Eng.*—Devil's Cotton.

Habitat.—Bengal. Throughout the hotter parts of India from U. P. to Sikkim, Khashia Mts., and Assam.

Parts Used.—The root-bark, leaves & stems.

Constituents.—The root-bark contains gum, wax, non-crystalline extractive matter & ash (11 p. c.)

Action.—The leaves & stems are demulcent. The root-bark is emmenagogue.

Preparations.—Infusion of leaves and Sap of the root-bark.

Uses.—An infusion of *fresh leaves* and stems in cold water is very efficacious in gonorrhœa. The *root-bark* is a reputed remedy for congestive and nervous dysmenorrhœa. The fresh viscid juice abounding in the thick easily separable bark of the root is given in half-drachm doses in varieties of dysmenorrhœa. A single administration during the menses is said to cure the disease and bring on conception in young married women. The viscid sap is insoluble in water. It is generally given from the first day of the flow for 7 days successively. In cases where the pain precedes the flow, it is given two days previous to its appearance.

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4 ABRUS PRECATORIUS
or A. Minor or A. Pauciflorus.

(*N. O.*—Leguminosæ.)

Sans.—Gunja, *Eng.*—Jequirity, Indian or Jamaica liquorice. *Pers.*—Gunchi, Chashami-Khurosa. *Hind.*—Rati ; Gunja. *Guz.*—Gumchi, Chanothi. *Ben.*—Kunch. *Mah.*—Gunja. *Tel.*—Guriginja. *Tam.*—Gundumani. *Can.*—Gurugunji. *Mal.*—Kunni. *Punj.*—Mulati. *Cash.*—Shangir.

Habitat.—All India, from the Himalayas down to Ceylon.

Parts Used.—Roots, Seeds and Leaves.

Constituents.—The seeds contain an albuminous substance of a poisonous nature, named *abrin* the active principle, similar in action to the *ricin* of castor oil seeds. Like all albuminous seeds it loses its activity when boiled. Its roots contain about 15 per cent glycyrrhizin and 8 per cent of an acrid resin : leaves also contain about 10 per cent of glycyrrhizin.

Action.—Laxative antiphlogistic, aphrodisiac, anti-ophthalmic. The action of the seeds resemble that of the bacterial toxin. The temperature is lowered by the injection of its infusion into the circulation of the lower animals and death takes place from cardiac depression and the blood remains fluid after death. This poisonous property has been utilized by ophthalmologists for exciting an artificial purulent ophthalmia for the cure of pannus, granular lids or trachoma.

Preparations—Infusion, Medicated Oil, Paste of seeds and Juice of fresh leaves.

Uses.—Infusion for *external* application. *Medicated oil* prepared by boiling together two parts of *Gunja* and 4 parts of juice of *Bhrangraj* in 4 parts of Gingelly oil. The *leaves* steeped in warm mustard oil are applied over the seat of pain or they are warmed over the fire and applied after smearing the part with warm castor oil. The *juice of fresh leaves* mixed with some bland oil is applied to the painful part to relieve pain and reduce swelling. The juice rubbed daily with plumbago root (*chitraka*) to leucodermatic spots for about a month is said to remove them. *The leaves are chewed and their juice swallowed in cases of hoarseness.* The *root* is made into a syrup by boiling 2 ounces of fresh roots with 1 ounce of Abelmoscus capsules sliced, in 10 ounces of water for half an hour, straining, then adding 8 ounces of sugar or honey and boiling down to the consistence of a syrup. Dose:—1 to 4 drachms to be given frequently in the coughs of children. This syrup must be made fresh as required as it does not keep well. The *seeds* when powdered and boiled with milk have a powerful tonic and aphrodisiac action on the nervous system. Dose of the powder is 1 to 3

grains. If administered uncooked they act as strong purgative and emetic ; in large doses they are acrid poison, giving rise to symptoms like those of cholera. The seeds are rubbed with a little water into a *paste* and applied to contusions to reduce pain and swelling. It is also applied to the bare skin in alopecia, in sciatica, stiffness of the shoulder-joint, paralysis and other nervous diseases. Mixed with the paste made of plumbago root it is applied as a stimulant dressing in white leprosy When decorticated and finely ground they are used for pannus cornea (vascularisation of the cornea usually due to the irritation of the granulations in conjunctivitis ; the cornea is normally non-vascular) and granular lids. They cause a true purulent ophthalmia. A three per cent. solution prepared by steeping the decorticated and powdered seeds in cold water for 24 hours is brushed over the reversed lids two or three times a day to cause purulent ophthalmia. This inflammation will gradually cease and the patient will be free from pannus and granulations. The following formula is said to be beneficial in cases of paraplegia :— Take of Abrus root 6, black sulphide of Mercury 12, fruit of Margosa tree (*neem*), Cannabis. Indica and Croton seed each two parts. Rub them together and make a paste in lime-juice. Dose:—grs. 3 to 6. Diet :—Rock salt (*Sindhava*) and Assafœtida are to be used.

Absinthium Officinalis or A. Vulgaris—See Artemesia Absinthium.

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5. ABUTILON INDICUM or A Asiaticum.

(*N. O.* MALVACEÆ.)

Sans.—Atibala. Kankatika. *Hind.*—Kanghi. *Panj. and Sind.*—Peelee-bootee, Atikhirate. *Ben.*—Potaree. *Bom.*—

Madmi, Kanghai. Chakrabhenda. *Goa. and Kon.*– Tupkadi. *Tam.*—Tatti. Peruntutti. *Mal.*—Pettaka. Uram. *Cing.*—Anona. *Bom.* (seeds) Balbij.

Habitat.—Throughout tropical India, dry country and Ceylon.

Parts Used.—The root, bark, leaves, seeds and fruits.

Constituents.—The leaves contain mucilage, tannin, organic acid and traces of *Asparagin* and ash, containing alkaline sulphates, chlorides, magnesium phosphate and calcium carbonate. The roots also contain *Asparagin*.

Action.—Demulcent, aphrodisiac, laxative, diuretic, pulmonary and sedative.

Preparations.—Decoction of the seeds and bark (1 in 10). Mucilage of bruised leaves. Infusion of leaves or roots.

Uses.—An infusion of the *leaves* or of *the roots* is prescribed in fevers as a cooling medicine. A decoction of the leaves is used as a mouth-wash in toothache and in cases of tender gums and also in gonorrhœa and inflammation of the bladder. The *flowers* and leaves are a local application to boils and ulcers. The leaves contain some mucilaginous substance which they yield to hot water, Their decoction is therefore useful as a fomentation to painful parts. The *juice* of leaves and ghee one tola each are given in catarrhal, bilious diarrhœa. The *seeds* are used in decoction in piles; also in the treatment of coughs. They are said to be distinctly useful in gonorrhœa, gleet and chronic cystitis. The seeds are burnt on charcoal and recta of children affected with thread-worms are

exposed to the smoke. The *bark* and the *root* are valued as diuretics. Infusion of the root is used in relieving strangury and hæmaturia; it is also said to be useful in leprosy.

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6. ACACIA ARABICA or A Ferruginea.

(*N. O.*—LEGUMINOSÆ.)

Sans.—Vabboola, Barbara. *Pers.*—Kare-mugilan. *Eng.*—Indian gum-arabic tree. *Hind. and Mah.*—Babul: Kala-babli. *Ben.*—Babla: *Duk.*—Kali-kikar. *Guz.*—Kaloa-baval. *Tel.*—Nallatumma. Barbaramu. *Tam.*—Karuvael. *Can.*—Karijali, Bauni. *Mal.*—Karuvelum. *Kon.*—Shameeruku. *Punj. and Cash.*—Sak. *Arab.*—Am-mughilam. *Pers. and Arab.*—(extract) Akâkia.

Habitat.—Common all over India; plentiful in Western Peninsula, the Deccan and Coromandal Coast.

Parts Used.—The bark, gum, leaves, seeds and pods.

Constituents.—The gum contains arabic acid combined with calcium, magnesium and potassium; also small quantity of malic acid, sugar, moisture 14 per cent, ash 3–4 per cent. The bark and pods contain a large quantity of tannin; the pods contain about 22·44 per cent.

Action.—Astringent, demulcent, aphrodisiac or nutritive and expectorant.

Preparations.—Decoction, Poultice, Powder, Paste and Mucilage of gum.

Uses.—The tender growing tops rubbed into a *paste* with sugar and water and given morning and evening act as demulcent in coughs. The watery extract

is injected to allay irritation in acute gonorrhœa especially in cases complicated with dropsy (when opium is prohibited) and leucorrhœa. The tender *leaves* beaten into a pulp are administered in dysentery and diarrhœa; the decoction is used in the same complaints as an astringent enemata. As *gargle* it is useful in spongy gums, relaxed sore-throat and as wash in hæmorrhagic ulcers and wounds. Bruised tender leaves formed into a *poultice* and applied to ulcers act as stimulant and astringent. The *bark* is a powerful astringent: its decoction is largely used as a gargle and mouth-wash in cancerous and syphilitic affections. It is a useful injection in gonorrhœa, cystitis, vaginitis, leucorrhœa, prolapsus ani, prolapsus uteri etc. The infusion of the bark (1½ ounces of the bark to one pint of water) is given as an astringent tonic in chronic diarrhœa and diabetes mellitus, in doses of 1½ to 2 ounces twice a day. The *juice* of the bark mixed with breast-milk is dropped into the eye in conjunctivitis. The burnt bark and burnt almond shell both pulverised and mixed with salt make a good tooth-powder. The *gum* is administered in the form of mucilage in diarrhœa and dysentery and also in diabetes mellitus, as the gum is not converted into sugar. The *powdered gum* mixed with quinine is useful in fever cases complicated with diarrhoea and dysentery; mixed with the white of an egg it is applied to burns and scalds. The powdered gum is also used to arrest hæmorrhages. Fried in ghee, the gum is useful as a nutritive tonic and aphrodisiac in cases of sexual debility. In the form of mucilage the gum is a most common and useful adjunct to other medicines in pulmonary and catarrhal affections, and in irritable states of the genito-urinary organs.

Slight cases of cough or irritation of the throat are often relieved by a piece of this gum allowed to dissolve slowly in the mouth. The *pods* are regarded as an expectorant and used in coughs. *Akakia* is a styptic, tonic and astringent. Dose of the gum and extract is 30 grains each. The following is useful in chronic diarrhœa, dysentery and passive hæmorrhages :—Take of *Akakia* 2 drachms, the berries of Myrtle (*Velayti Mhendi*) 2 drachms. Reduce these to a fine powder. Dose :—grs. 10 to 30 three times a day.

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7. ACACIA CATECHU.
or A. Wallichiana or A. Polyacantha.

(*N. O.*—LEGUMINOSÆ).

Sans. Mah. and Can.—(extract) Khadira. *Eng.*—Black Catechu. *Hind.*—Katha. *Mah. and Ben.*—Khair. *Guz.-Duk.*—Kher; Kath-khar. *Tel.*—Podalimanu: Poogamu. *Tam.*—Voadalam. Karangalli, Kasku-kutta. *Mal.*—Khadiram. *Kon.*—Kathu.

Habitat.—Common in the forests of India and Burma.

Parts Used.—The extract, bark, flowering-tops and gum.

Constituents.—Catechu-tannic acid 35 per cent., catachuic acid or catachin; catachu red; gum, quercetin and ash. The catechu-tannic acid occurs as a dark reddish-brown powder which oxidises in the air.

Action.—Powerful astringent.

Preparations.—Gum-catechu, powder, tincture, and decoction.

Uses.—*Catechu* is an extract prepared from the wood by boiling it in water and inspissating the decoction. Its

chief use in India is as an ingredient of the packet of betel leaves chewed by the people. It is a valuable astringent in passive diarrhœas and hæmorrhages, either in *powder or as tincture* combined with other astringents; especially useful for children. Take powdered catechu and powdered cinnamon bark each 10 or 15 grains, mix them together in sufficient honey or syrup and make into four pills; or take of catechu powder three drachms and cinnamon-bark powder one drachm; infuse both in half-pint of boiling water for two hours; filter and administer in doses of 1½ to 2 ounces three times a day. For adults 5 drops of laudanum may be added to each dose during administration but not for young children. A small piece held in the mouth and allowed slowly to dissolve acts like an astringent lozenge and is of great service in hoarseness, relaxed sore throat loss of voice etc., also in cases of mercurial salivation, bleeding, ulcerations and sponginess of the gums. In toothache it is employed to stuff the hollow of the aching tooth. When mixed with lard or simple ointment it makes a useful application to chronic ulcerations with fœtid discharges; in obstinate cases a little of powdered copper sulphate (15 grains to the ounce of the ointment) may be added. The *tincture* is an excellent application for threatened bed sores and the decoction is useful for washing sore or cracked nipples. Catechu in the form of *injection* is useful in the treatment of gonorrhœa, otitis, otorrhœa etc.

Some more Preparations.—(1) *Kath-bol* is a mixture of catechu and myrrh given to women after confinement, as a tonic and to promote secretion of milk. Combined with the seeds of Bonducella and with Ferri-

sulphas it is useful for strengthening gums. (2) *Kathlon* is a confection containing the bark of Acacia Catechu, rose-buds and sugar. (3) *Svalpakhadiravatika* is a favourite medicine in diseases of the mouth and gums. To prepare it, take of catechu twelve seers and a half, water sixty-four seers, boil down to eight seers, then add nutmeg' camphor, betel-nuts and *kakkola* each half a seer in fine powder, and prepare a mass fit for being made into boluses. They are directed to be kept in the mouth in affections of the teeth, gums, palate and tongue (Chakradatta). (4) The following decoction called *Khadirastaka* is prescribed for internal use in boils, prurigo, measles, and other skin diseases:—Take of catechu, the three myrobalans nim-bark, leaves of *Trichosanthes Dioica* (*patola*) *gulancha* and *Adhatoda Vasica* equal parts and prepare a decoction in the usual way. (5) Sarangadhara describes a fermented liquor called *Khadirarishta* for use in skin diseases. It is prepared with catechu and the wood of *Pinus Deodara* and some other ingredients in smaller proportions. (6) In the Koncan juice of the *fresh bark* is given with Assafœtida in hæmoptysis and juice of the flowering-tops 2 tolas with cumin ½ tola, milk and sugar in gonorrhœa, syphilis and heat of the body. (7) For leprosy, a decoction of the five parts of the plant, *viz*—the root, leaf, flower, bark and fruit is given as drink with food; it is also used externally for bathing the affected parts; locally to the ulcers an ointment of catechu is applied. The following are a few more formulæ for household use:—

(8) Take of catechu 5 parts, assafœtida 4, *Papadkhar* (carbonates of potassium and sodium) 3, opium 2 parts. Mix and make a pill mass. Dose:—grs. 5 to 10. Given in the juice of betel-leaf in chronic dysentery.

(9) Take of Catechu, the three myrobalans, the bark of *neem* or Margosa tree, the root of Cocculus Villosus, *Gulancha* (Cocculus Cordifolius) and leaves of Adhatoda Vasika, all equal parts. Prepare a decoction. Dose:—half to one drachm. Useful in Prurigo and other skin diseases.

(10) Take of bark of Acacia catechu 2 parts, Conessi bark (*Indrajava*) 2, bark of margosa tree 2, Sweet-flag root (*vacha*) 2, *Triphala* (the three myrabolans) 2, root of Ipomœa Turpethum (*Triputa or trivrita*) 2 and water 20 parts. Mix and make a decoction. Dose:—1 drachm used in gonorrhœal rheumatism.

(11) Take of Catechu 10, Nutmeg (*Jaiphal*), Camphor, Areca-Catechu and Cardamoms each 2 parts. Mix, make a powder and add gum of Acacia Arabica to make a bolus to be kept in the mouth in affections of the gums, teeth, tongue and palate.

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8. ACACIA CONCINNA or A. Rugata.

(N. O. LEGUMINOSÆ)

Sans.—Saptata. *Hind.*—Kochi. *Duk.*—Siki. *Ben.*—Banritha. *Tel.*—Cheekaya; gogu. *Tam.*—Sheeyakày. *Can.*—Sheegae. *Mal.*—Cheeyakayi. *Kon.*—Shikayi. *Guz. and Mah.*—Reetah.

Habitat.—In the tropical jungles throughout India.

Parts Used.—Pods and leaves.

Constituents.—Pods freed from seeds contain Saponin 11·2 per cent. Malic acid 12·75 per cent. Resin 1 per cent. Glucose 13·9 per cent. Gum and colouring matter 21·5 per cent. Crude fibre 22 and Ash 3·75 per cent.

Action.—Externally detergent and astringent. Internally aperient, expectorant and emetic.

Preparations.—Decoction, infusion, ointment and paste.

Uses.—The decoction of the *pods and leaves* is useful aperient in bilious affections. The decoction of the pods (one in forty parts of water) is used as hair-wash; it is said to promote growth of the hair and remove dandruff. The *tender leaves* soaked into pepper-water and ground up with salt, tamarind and chillies form an excellent chutney, useful in bilious affections such as jaundice etc. The infusion of the leaves is useful in checking malarious fevers; it also prevents flatulence, as it acts as a mild laxative. The pods ground up and formed into an ointment make a good application in skin diseases.

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9. ACACIA FARNESIANA.

(*N. O.*—LEGUMINOSÆ)

Sans.—Arimaedah. *Eng.*—The Cassia flower. *Hind.*—Vilayati kikar; Gandbabul; Vilayati-babul. *Ben.*—Guyababla. *Duk.*—Gu-kikar. *Guz.*—Jabbaval; Gu-baval. *Tel.*—Kempu or Nugatumma. *Tam.*—Pikkaruvil. *Can.*—Karijali. *Mal.*—Kariveelum; Pitumma Pivelum. *Kon.*—Kusri-jhad. *Mah.*—Gui-babhul. *Sind.*—Kucbaval.

Habitat.—It is found everywhere in India and is well known for its bright yellow flowers, which yield a most delicious perfume.

Parts Used.—Bark, leaves, gum, pods and flowers.

Constituents.—The oil of cassia flowers contains benzaldehyde; salicylic acid, methyl-salicylate benzyl-alcohol analdehyde.

Action.—Astringent, demulcent and alterative. The bark is astringent; flowers are stimulating.

Preparations—Decoction, mucilage and oil.

Uses.—The decoction of the *bark* (1 in 20) together with ginger is an astringent wash for the teeth, and so it is useful in the bleeding of the gums etc. A *gum* exudes from the bark of the tree which is a good substitute for gum arabic, but yields a gelatinous fluid on treatment with water. The *tender leaves* are bruised with a little water and swallowed in gonorrhœa. The *pods* of the round yellow heads constitute the cassia flowers, which when distilled yield a delicious perfume which is reputed to be alterative in action. They contain a balsamic liquid or *oil* which is employed as an adjunct to aphrodisiacs in spermatorrhœa.

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10. ACACIA SENEGAL.

(*N. O.*—LEGUMINOSÆ.)

Sind.—Khor. *Raj.*—Kumta.

Habitat.—A small thorny tree met with in Sind and Ajmere.

Parts Used.—The gum.

Action.—The gum is demulcent and emollient.

Uses.—The gum is used externally to cover some inflamed surfaces such as burns, sore-nipples etc., and it blunts the acridity of irritating matters by being blended with them. The powdered gum is useful in checking hæmorrhage from leech bites and when blown up into the nostrils it checks severe epistaxis. Internally it is useful in inflammations of the gastric and intestinal mucous

membranes and also of the urinary organs. Held in the mouth gradually to dissolve it allays cough and affords relief. It is also used as a substitute for amylaceous food in diabetes, since it is not converted into sugar.

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11. ACACIA SPECIOSA.

(*N. O.*—LEGUMINOSÆ.)

Sans.—Shirish: Sahasraki; Pruthushrangi. *Eng.*—Sirissa tree. *Hind.*—Siris; Sirin. *Ben.*—Siriz. *Guz.*—Pitosarshio. *Mah.*—Siras. *Tel.*—Girishamu. *Tam.*—Chireedam. *Can.*—Shireesha-mara. *Mal.*—Nannæni.

Habitat.—Sub-Himalayan tract, Bengal, Central and South India.

Parts Used.—Seeds, Bark, Root-bark, leaves and flowers.

Action.—Astringent and cooling.

Preparations.—Powder, Oil and Paste.

Uses.—The *bark* and *seeds* are astringent and given in bleeding piles, diarrhœa, gonorrhœa &c., in powder. The seeds form part of an *anjan* used for ophthalmic diseases. In doses of 1½ drachms the powder of seeds has been successfully administered in cases of scrofulous enlargement of the glands; locally a paste made of the powder and water is also applied. The oil extracted from the seeds is given in leprosy. The *leaves* are applied to any eye-complaints as in ophthalmia; the *flowers* form a cooling application to boils, eruptions and swellings. The powdered root of the bark is used to strengthen the gums when they are spongy and ulcerative.

Acajuba Occidentalis—See Anacardium Occidental.

12. ACALYPHA INDICA.
or A. Spicata or A. Ciliata or A. Canescana.

(N.O.—EUPHORBIACEÆ)

Sans.—Arittamanjarie. *Eng.*—Indian acalypha. *Hind.*—Kupi. *Ben.*—Muktajhuri. *Guz.*—Vanchi Kanto. *Mah.*—Khokali, Khajoti. *Tel.*—Kuppichettu. *Tam.* Kuppivaeni. *Can.* Kuppigida. *Mal.* Kuppamani. *Kon.*—Kunkmiphal.

Habitat.—This plant is a common annual in Indian gardens.

Parts Used.—Leaves, root, stalks and flowers.

Constituents.—An alkaloid "acalypus."

Action.—Cathartic, anthelmintic, expectorant, emetic, anodyne and hypnotic.

Preparations.—Infusion of root, powder, decoction, cataplasm, succus (juice expressed), tincture and liquid extract.

Uses.—The *leaves* possess laxative properties; are used in the form of powder or decoction: mixed with garlic they are used as anthelmintic in worms. Mixed with common salt they are applied to scabies; and their juice mixed with oil forms an application in rheumatic arthritis. The *expressed juice* of the leaves is a safe, certain and speedy emetic for children in one teaspoonful doses, in cases of croup; in smaller doses it is expectorant, and is useful in bronchitis and asthma. The decoction is employed in ear-ache as instillation and also as fomentation round the aching ear; and a *cataplasm* of the bruised leaves is applied to syphilitic ulcers, to maggot-eaten sores and also to relieve the pain of snake-bites. The *powder* of dry leaves is used in bed sores. In congestive head-ache a piece of cotton saturated with the expressed juice

of the plant or leaves and inserted into each nostril is said to relieve it by causing hæmorrhage from the nose. In cases of obstinate cons ipation of children the leaves ground into a *paste* and made into a ball and introduced into the rectum, relaxes the sphincter ani and produces free motions. The *root* bruised in water acts as a cathartic. In the treatment of acute mania the following is recommended :—Macerate three ounces of the fresh *leaves, stalks and flowers* in a pint of spirit of wine in a closed jar for seven days, occasionally agitating the same, strain, press, filter and add sufficient spirits of ether to make one pint; dose is from 30 to 60 minims frequently repeated during the day in honey. Hakims treat cases of acute mania in early stages by the following mode:—Take of one ounce of fresh juice of the leaves and dissolve in it six grains of common salt; drop a little of this mixture in both nostrils every morning and then place the patient under cold shower baths for three mornings regularly; this causes a quantity of mucus and other matter to escape from the nostrils.

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13. ACANTHUS ILICIFOLIA.

(*N.O.*—ACANTHACEÆ.)

Sans.—Harikasa. *Eng.*—Holy leaved Acanthus. *Hind. and Ben.*—Harkach Kanta. *Goa.*—Moranna. *Mah.*—Marandi. *Mal.*—Paina Schulli.

Habitat.—West India.

Parts Used.—The root, leaves and tender shoots.

Constituents.—A bitter alkaloid, an organic acid, fatty matter, chlorophyll and soft resins.

Action.—Astringent and nervine tonic, expectorant and stimulant.

Preparations.—Decoction (1 in 20) in doses of half to one ounce.

Uses.—The tender *shoots and leaves* are used locally for snake-bite. The root is expectorant and used in cough and asthma. The *root* boiled in milk is largely used in leucorrhœa and general debility. As stimulant the *decoction* is given with cumin seeds in dyspepsia with acid eructations.

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14. ACHYRANTHES ASPERA.

(*N. O.*—AMARANTACEÆ.)

Sans.—Aghata; Khara-manjari; Apamarga. *Eng.*—Rough Chaff tree. Prickly chaff-flower. *Ben.*—Apang. *Duk.*—Agari. *Guz.*—Safed Aghedo. *Mah.*—Aghada. Pandhara-aghada. *Tel.*—Uttaraene; Antisha. *Hind.*—Latchira; chirchira. *Tam.*—Shiru-kadaladi; Nayurivi. *Mal.*—Kadaladi. *Can. and Kon.*—Uttaranee.

Habitat.—A small herb found all over India.

Parts Used.—The herb, leaves, seeds and root.

Constituents.—The fruit contains a large percentage of alkaline ash containing potash.

Action.—Astringent, diuretic, alterative and anti-periodic.

Preparations.—Decoction and infusion of leaves; *Khar* prepared by incineration of the plant; Powder of root, paste and medicated oil.

Uses.—The *decoction* (2 oz. of the plant in 1½ points of water) is a good diuretic found efficacious in renal dropsies; the leaf *juice* is also useful in stomach-ache

and bowel complaints, piles, boils, skin eruptions etc; in large doses it produces abortion or labour pains. Fresh *leaves* ground into a paste with *gool* or jaggery or mixed with black pepper and garlic and made into *pills* are used as antiperiodic especially in quartan fevers; leaves rubbed into a *paste* with water are applied with much benefit to bites of poisonous insects, wasps, bees etc. Fresh juice of the leaves thickened into an extract by exposure to the sun and mixed with a little opium is an efficacious application to primary syphilitic sores. An *infusion of the root* is given as a mild astringent in bowel complaints. A pinch of the *root-powder* with a pinch of pepper powder and honey is a nice remedy for cough. The *spike* with the *seeds* is often used as an expectorant. The seed rubbed with rice water is given in bleeding piles. *Payasam* or *Kheer* made of seeds in milk is a good remedy for diseased brain. The root taken on Sunday conjoined with *pushya nakshitra* after bathing and kept hanging in a corner is used in stimulating labour pains and expediting delivery. It is tied into the hairs or into the waist of the woman in pains. The root immediately after delivery is removed and thrown into a running stream of water. The seed soaked in butter-milk during the night and ground into an emulsion the next morning is a cure for biliousness. The *ashes of the root* rubbed with honey and administered (2 *vals or 12 grs.*) is a cure for cough. The ashes with water and jaggery cures dropsies such as ascites, anasarca etc. The following is the formula for *Apamarga Taila*.—Take of sesamum oil four seers, the alkaline water prepared from the ashes of Achyranthes aspera sixteen seers, the ashes of the plant one seer and boil them together in the usual

way. This oil is poured into the meatus in cases of noise in the ears and in deafness. Instilled into the nostrils it cures nose-bleeding.

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15. ACONITUM CHASMANTHUM.

(*N. O.*—RANUNCULACEÆ.)

Jhelum Basin.—Mohri; Pinn. *Cash.*—Banbal-nag.

Habitat.—Alpine and sub-alpine zone of the Western Himalayas from Chitral and Hazara to Cashmere between 7000 & 12000 feet.

Parts Used.—The root.

Constituents.—The alkaloid obtained from the plant is *Ind-aconitine*; it is soluble in acetone, chloroform, alcohol or ether. By adding light petroleum to a solution of the base, well-defined crystals may be readily obtained.

Action.—The same as that of aconitine of the A. Napellus and pseudo aconitine of the A. Ferox. But it differs in degree only, not in kind.

Uses.—It is said to be used in Northern India as a substitute for the imported tuber of Aconitum Napellus, which see.

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16. ACONITUM FEROX.

(*N. O.* RANUNCULACEÆ.)

Sans.—Visha; Vatsanaba. *Eng.*—Indian aconite; Monkshood. *Hind.*—Mithazahar. *Arab.*—Bish. *Pers.*—Bishnag. *Ben.*—Katbish or Mithavish. *Guz. and Mah.*—Vuchnag. *Tel.*—Vasanubhi. *Tam.*—Vishamavi Vishnanuir. *Can. Mah. and Kon.*—Vatsanabhi. *Fr.*—Char-de-Venus.

Habitat.—The temperate and sub-Alpine regions of the Himalayas, Nepal, Cashmere and Sikim.

Parts Used.—The dried tuberous root.

Constituents.—A crystalline alkaloid called *Napelline or pseudo-aconitine* similar to aconitine (one pound yielding one drachm) with a transparent vitreous appearance, soluble in boiling water, less soluble in ether, chloroform and alcohol ; and a small quantity of *aconitine* (0·97 to 1·23 per cent), picro-aconine, aconine, benzyl-aconine and homo-napelline.

Action.—Diaphoretic, diuretic, antiperiodic, anodyne, anti-diabetic, antiphlogistic, antipyretic, in very small doses. In large doses it is virulent poison, narcotic and powerful sedative. It reduces the frequency and tension of the pulse and paralyses the respiratory centre.

Preparations.—Liniment for external use ; Tincture (1 in 8 of alcohol), dose :—2 to 5 minims.

Uses.—This root is intensely acrid and poisonous and distinctly more powerful than that of Aconitum Napellus and therefore more suited for the external applications or the manufacture of aconitine. In the form of liniment aconite is useful in cases of neuralgia and muscular rheumatism, acute and chronic, itching as in erythema ; in nasal catarrh, tonsillitis, sore-throat, coryza, acute gout ; and in leprosy it is alternative and is a nervine tonic in cases of paralysis. It controls spermatorrhœa and incontinence of urine. It is found to be remarkably beneficial in diabetes, decreasing the quantity of urine and sugar. For *internal* administration the tincture must be used with great caution on account of the virulent character of the drug. It should not be used when heart disease is present. The following are some of the

favourite medicines popular among Vaidyans, which contain aconite :—Mrityunjaya Rasa, Ananda Bhairava Rasa, Jvara Murari Rasa, Panchavaktra Rasa, Saubhagya Vatika, Ramabana Rasa, Kaphaketu Rasa, etc. These are employed in the treatment of a variety of fevers and inflammations of the mucous membranes of the throat, nose, stomach & intestines. The following are a few useful, household formulas:—

1. Take of Aconitum ferox root 1, Sulphur 1 black pepper 1, long pepper (*Pipali*) 2, Cinnabar 1, borax or biborate of Soda 1, juice of Datura alba sufficient quantity to make a pill-mass. Mix and divide the mass into pills of two grains each. Dose :—1 to 2 pills or grs. 2 to 4. Used in fever with brain symptoms; if constipation exists add croton-seed-powder to the above pill mass.

2. Take of Aconite Ferox root, borax, cumin seeds, *panch lavana*, *Triphala* (the three myrobalans), *Trikatu* (the three acrids :—a compound preparation of equal parts of long-pepper, black-pepper, and dried ginger), mica or talc (*abraka*), cinnabar and sulphur equal parts. Mix and make a pill mass Dose :—grs 4 to 10 Used in obstinate fevers with temperature between 101 and 102° F.

3. Take of Aconite Ferox 1, Mace (*Jaipatri*) 1, black-pepper 1, Cinnabar 1, cloves or cinnamon 1, Ambergris *Amber*) ½, musk (*Kasturi*) ¼. Mix and make a pill mass. Dose :—grs. 2. Used in cough and asthma.

4. Take of Aconite 2, Pellitory root (*Akalakara*) 2 and Rock-Salt 5 parts. Mix and make a paste. For application to swollen hands and feet.

5. Take of Aconite Ferox and Opium equal parts. Mix and make a paste in brandy. Used as local application in cases of guinea-worm.

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17. ACONITUM HETEROPHYLLUM or A. Cordatum.

(*N. O.*—RANUNCULACEÆ.)

Sans., Mah., and Can.—Ativisha, Sitashringi, Bhangura, Upavishanaka. *Eng.*—Indian atees. *Hind. and Ben.*—Atis, Ateicha. *Pers.*—Vuggi-turki. *Tel.*—Ativasu. *Tam.*—Ativudayam. *Guz.*—Atavasa.

Habitat.—Sub-alpine and Alpine Zones, the Himalyas from Indus to Kumaon.

Parts Used.—The dried tuberous roots.

Constituents.—An intensely bitter alkaloid, *atisine*, aconitinic acid, tannic acid, pectous substance, abundant starch, fat, a mixture of oleic, palmitic, stearic glycerides, vegetable mucilage, cane-sugar and ash 2 per cent. Atisine is intensely bitter but non-poisonous.

Preparations.—Tincture (1 in 8) Dose.—10 to 30 minims; decoction; powder of root, Dose:—10 to 30 grains.

Action.—Bitter, tonic, astringent, stomachic, antiperiodic and aphrodisiac.

Uses.—It is valuable for combating debility and after fevers it is an excellent tonic; it is very efficacious in diarrhœa, dysentery, acute inflammatory affections etc; also in cough, dyspepsia and diarrhœa depending thereon. In fever with diarrhœa the following decoction is recommended in Sarangadhara:—Take of *atis*, ginger, *Kurchi* bark, tubers of Cyperus rotundus (*mustaka*) and root of

Cocculus cordifolia (*gulancha*) equal parts, in all two tolas, water thirty-two tolas. Boil till the water is reduced to eight tolas. This quantity is given in two or three divided doses during the course of the day. Chakradatta recommends the following called *Hriveradi* in similar cases:— Take of *atis*, dried bela, root of Pavonia odorata and cyperus rotundus and the horny excrescence or gall of Rhus succedanea equal parts; powder and mix. This compound powder is given in doses according to age, with the addition of honey. Sometimes, long-pepper is added to the above ingredients, when the powder is called *Balachatur bhadraka*. The plain powder of the tuberous root mixed with honey is given in cough, coryza, fever and vomiting of children; it is applied to the tongue, dose being strictly according to age. The following are a few simple home remedies:—

(1) Take of aconite root (*atis*) 1 dr., Bonduc nut (*Sagargota*) 2 drs. Reduce to a fine powder and mix. Dose:—grs. 10 to 20. Used in bilious fever.

(2) Take of aconite root, *Mustaka*, the gall of Rhus Succedanea (*Kakadshringhi*) and Long-pepper (*Pipali*) equal parts. Mix and make a powder Dose:—1 drachm for adults and $\frac{1}{4}$ to $\frac{1}{2}$ dr. for children. Used in fever, diarrhœa and irritability of the stomach.

(3) Take of aconite root, chiretta (*Kiriatu*), *mustaka*, (Cyperus Rotundus) and *nirvisi* (Delphinum Denudatum) each 1 dr., and *Gulvela* (Cocculus C.) 2 drs. Mix and make a powder. Dose:—$\frac{1}{2}$ to 1 dr. Used during intermissions of feverish attacks.

Antidotes:—The antidotes to aconite poisoning are tannic acid-astringent infusion, atropin, and stimulants.

like alcohol and ammonia; Digitalis also to counteract the depressing effect upon the heart. Evacuation, artificial respiration, warmth and friction.

18. ACONITUM NAPELLUS.

(*N. O.*—RANUNCULACEÆ.)

Sans.—Visha. *Eng.*—Monk's-hood, Aconite, Woolf's bane. *Hind.*—Mithazahar. *Ben.*—Katbish. *Mah and Guz.*—Nagpuri bachanag. *Cash and Punj.*—Mohri.

Habitat.—Indigenous to the temperate Himalayan region, where it grows in abundance.

Parts Used.—The dried root.

Constituents.—It yields several chemical principles, the principal of which being the alkaloid *aconitine*.

Action.—Powerfully sedative, anodyne and antiphlogistic. In large doses, a virulent poison; in small doses, a febrifuge and tonic.

Preparations.—Tincture, dose:—5 to 15 minims; Liniment for external use only. An extract is also made from the fresh leaves and flowering tops.

Uses.—In various forms of neuralgia, tetanus, acute and chronic rheumatism, gout, erysipelas and in affections of the heart, characterised by increased action, it is a remedy of established value; but its operation on the system requires to be carefully watched. Further uses of this root are as indicated under ACONITUM FEROX.

19. ACORUS CALAMUS. or A. Odoratus.

(*N. O.*—AROIDEÆ.)

Sans.—Vacha. *Eng.*—Sweetflag. *Hind and Ben.*—Bach. *Pers.*—Agri-turki. *Duk.*—Vach. *Guz.*—Godavaj.

Mah.—Vekhand. *Tel.*—Vasa. *Tam.*—Vasambu. *Can.*—Baje. *Mal.*—Vayambhu. *Kon.*—Ekhanda.

Habitat—A semi aquatic perennial growing in damp, marshy place, and indigenous to India and Burma.

Parts Used—The dried rhizome.

Constituents.—A volatile oil, *acorin*, a bitter principle *acoretin* (choline), *Calamine* (useful in dysentery), starch, mucilage etc; the volatile oil is yellowish-brown, of aromatic odour and contains pinene, sesqui-terpene and a small quantity of phenol. Acorin, a glucoside is a honey-like liquid, very bitter and aromatic, soluble in alcohol, chloroform ether, splitting into sugar and volatile oil. Acoretin is a resin-like body yielding by reduction ethereal oil and sugar. Calamine is a crystalline alkaloid soluble in alcohol and chloroform. The essential oil of Acorus Calamus is found to be composed of:—free normal leptylic and palmitic acid, eugenol, asaryl aldehyde, esters of acetic and palmitic acids, the crystalline body named *Calameone asarone*

Action.—The root is stimulant and aromatic, expectorant, antispasmodic, and nervine sedative; in large doses, *i.e.*, 30 grains it is nauseant and emetic. In the form of infusion it is tonic, stomachic or carminative, also anti-periodic.

Preparations.—Powder, dose:—5 to 20 grains; and Infusion (1 in 10 parts of boiling water) dose:—1 to 2 ounces.

Uses.—Given in the form of *infusion* it is useful in dyspepsia, flatulence, loss of appetite etc., and also in atonic and choleraic diarrhoea of children; as antiperiodic it is given in tertian fevers. It is also beneficial in

hysteria and neuralgia. With the addition of a little liquorice root it is administered in cases of cough, fever, capillary bronchitis, colic etc., especially in children. In cases of irritation of the throat and cough the root simply *chewed* produces copious salivation and an agreeable sensation of warmth ; in asthma it is found useful given in small doses of 10 grains repeated every two or three hours till relief is obtained. It is eaten freely during the prevalence of any epidemic as it is supposed to be an antidote for several poisons. In croton poisoning its *powder* mixed with water is given to counteract the poisonous effect. *Externally* it is used in chronic rheumatism, the root being powdered and rubbed up with cachew spirits and as counter-irritant to the chest in the catarrh of children ; the powder is a very effective insecticide, keeps moths from woollen goods and fleas from rooms. The root burnt to cinder, mixed with cocoanut or castor oil and smeared over the abdomen relieves flatulent colic. The powder of the burnt root-stock in 3 grain doses relieves infantile diarrhœa and colic. It is used as a diuretic in calculous affections and as an anthelmintic to expel worms in children. The rhizome with *bhang and ajowan* in equal parts is powdered and used as a fumigation to painful piles. The following is a valuable compound powder useful in dyspepsia and as a stimulaut in low fevers, epilepsy and insanity :—Take equal parts of acorus calamus root, assafœtida, *atis*. long pepper. black pepper, ginger, chebulic myrobalan and sonchal salt. Powder and mix them well together. Dose :—20 to 60 grains.

20. ADANSONIA DIGITATA.

(*N.O.* BOMBACEÆ).

Sans. and Mar.—Gorakh-chinch. *Eng.* Boabab or monkey-bread tree of Africa. *Hind and Guz.*—Gorakhamli; Sumpura. *Dak.* Hathi-khatiyan. *Tam.*—Papper-appauli; Anaipuliyamaram. *Can.* Brahmamlika. *Tel.* Simae-chinta. *Cing.*—Karthimbul

Habitat—One of the largest and long long-lived trees in the world, met with chiefly in Bombay, Guzarat, and Coromandal Coast and Ceylon. A deciduous large tree 60–70 feet high, very handsome, though stumpy when in foliage. The tree is named after Gorakh the Hindu monk of old, who is said to have taught his disciples under this tree. The fruits when dried, (shells) are used as water-pots by Monks. *Hatti Khatiyan* means Elephant flax in allusion to the great strength of the fibre prepared from its bark.

Parts Used.—Fruit (the pulp of the fruit), bark and leaves

Constituents.—The pulp contains phlobaphenes mucilage and gum, glucose, tartrate and acetate of potash and other salts The pericarp contains phlobaphene, albuminoids, gum, colouring matter, carbonate of potash and soda. The leaves contain wax, glucose, salts, gum and albuminoids. The bark contains wax, soluble and insoluble tannin, acid-gum, albuminous carbonate and chloride of sodium and potassium and a glucoside *adansonin*.

Action.—The fruit is somewhat acid, refrigerent and diuretic. The seed and its pulp is astringent, demulcent, stomachic and antiscorbutic. The bark is used as antiperiodic.

Preparations & Uses—The *pulp of the fruit* with figs is made into a syrup cooling and refrigerent in fevers, diminishing the heat and quenching the thirst. It relieves night-sweats and febrile flushes in consumption. It is useful in bilious dyspepsia and acid eructations. It is given in the form of a *sherbat* with cumin and sugar or with embelic myrobalans, fresh mint, rock-salt and long pepper. The pulp of the seed mixed with buttermilk is useful in diarrhœa and dysentery. *Externally* it is applied in skin diseases. The fresh juice of the *leaves* mixed with powdered ginger together with the expressed juice of the fresh root of Salvadora Indica is applied with considerable benefit to painful joints, indolent syphilitic ulcers, and chancres. The leaves are used as fomentations and poultices for rheumatic affections of the limbs and irritable inflammatory ulcers. The leaves dried and powdered are a good application to check excessive perspiration. A decoction of the bruised *bark* (1 in 20) boiled down to its third part is used in intermittent fevers in 1 to 2 ounce doses.

Adenanthera Vasika—See Adhatoda Vasika.

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21. ADENANTHERA PAVONINA.

(N. O.—LEGUMINOSÆ).

Sans.—Kuchandana; Kamboji. *Ben.*—Rakta-Kambul; Ranjan. *Bom.*—Val; thorli gunj *Tam.*—Manjadi, Anegundumani. *Tel.*—Bandi gurvina; Mansenikottae. *Mal.*—Manjeti. *Duk. and Guz.*—Badi-Gumchi; Hati-gumchi. *Kon. and Can.*—Manjutti. *Assam.*—Chandar.

Habitat.—East Himalayas and Western Peninsula.
Parts Used.—Seeds, leaves and root.

Preparations.—Powder and Decoction.

Uses.—*Powdered seeds* externally applied, hasten suppuration. A *decoction of the leaves* is a remedy for chronic rheumatism and gout. Used for a long time it acts as aphrodisiac. The decoction is also useful in hæmorrhage from the bowels and hæmaturia. The root is used as an emetic.

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22. ADHATODA VASIKA.

(*N O.*—ACANTHACEAE.)

Sans.—Sinhaparni, Vasaka. *Eng.*—Malabar nut. *Hind.*—Arusha; Rus. *Ben.*—Bakash. *Pers.*—Bansa. *Duk.*—Adarsa. *Tel.*—Addasaram, Adampaku. *Tam.*—Adatodai. *Can.* and Kon.—Adusogae. *Mal.*—Ataloetakam. *Mah.*—Adulsa. *Guz.*—Aduraspee; Adulso.

Habitat.—This plant grows in most parts of India.

Parts Used.—The leaves, root, flowers and bark.

Constituents.—An odorous principle, fat resin, a bitter alkaloid called *vasicine*, an organic acid "*adhatodic acid*," sugar, gum, coloring matter, and salts. The largest amount ef *vasicine* is contained in the root-bark and the leaves. Vasicine occurs in white crystals which are freely soluble in alcohol, also in water with an alkaline reaction. It forms crystalline salts with mineral acids.

Action.—Expectorant, diuretic, antispasmodic and alterative.

Preparations.—Infusion (1 in 10) dose:—½ to 2 ozs.; Aqueous extract, dose:—4 to 10 grains.; Juice of the leaves, dose:—2 to 4 drachms; Tincture (1 in 10) dose:—½ to 1 drachm; Compound Decoction, *Ghrita* and Electuary.

Uses.—The fresh *juice* two drachms with honey or with one drachm of ginger juice *or a decoction of the leaves and root* with pepper is an excellent cough mixture useful in chronic bronchitis, asthma and consumption. The juice of the leaves is considered useful for diarrhœa and dysentery, especially in hæmoptysis and in the bleeding of dysentery. The strong decoction is an efficacious fomentation to rheumatic and painful swellings and neuralgias; it is also a good application for scabies and other skin complaints. The dried leaves are smoked as cigarettes with much benefit in asthma. The fresh *flowers* are bound over the eyes in ophthalmia

Sarangdara describes the following compound decoction of the root of Adhatoda vasica, much used in fever with cough.—Take of *vasaka* root, *gulancha* and the root of Solarium Jacquini (*Kantakari*) in equal parts, two tolas in all, and prepare a decoction in the usual way. This is given with the addition of honey. A *ghrita* is prepared with clarified butter, a decoction of the plant and a paste of the root taken in the usual proportion, and is used in phthisis. *Vasavaleha* or electuary of *Vasaka* is prepared thus.—Take of the juice of *vasaka* leaves four seers, white sugar one seer, long pepper sixteen tolas, clarified butter sixteen tolas; boil them together till reduced to the consistence of an extract. When cool add honey one-seer and stir with a ladle till intimately mixed. Dose is one to two tolas in phthisis, cough with pain in the sides, hæmoptysis and asthma (Bhavaprakash). Bhaishajyaratnavali contains description of an oil "Vasachandanadi taila," which is prepared with a large number of valuable drugs and useful for rubbing on the body in affections of the chest, especially in phthisis and also in epilepsy, hysteria, insanity and in scurvy.

23. AEGLE MARMELOS

(*N. O.*—RUTACEÆ.)

Sans.—Bilva. Sriphal. *Eng.*—Bael fruit. Bengal quince. *Hind.*—Bel *Guz.*—Bilivaphal. *Pers.*—Shul. *Mah.*—Baela *Tel.*—Bilvamu. *Tam.*—Vilvam. *Can.*—Belapatre. *Mal.*—Koovalam ; Vilvam. *Ben.*—Bela. *Sind.*—Katori. *Gond.*—Maika. (*Sri.*—Goddess of Abundance ; *Phal.*—Fruit. It is an emblem of riches or fertility).

Habitat—Found all over India, from sub-Himalayan forests to Central and South India.

Parts Used—The fruit (both ripe and unripe), root-bark, leaves, rind of the ripe fruit and flowers.

Constituents—The pulp contains mucilage, pectin, sugar, tannin, volatile oil, bitter principle and ash 2 per cent. The wood-ash contains potassium and sodium compounds, phosphates of lime and iron, calcium carbonate, magnesium carbonate, silicia, sand etc. The fresh leaves yield in distillation a yellowish green oil with a peculiar aromatic odour.

Action—The fruit is alterative, nutritive and laxative. The unripe fruit is astringent, digestive and stomachic. The pulp is stimulant, antipyretic and anti-scorbutic.

Preparations—Powder (of the dried pulp), dose:—10 to 40 grains. Syrup, dose:—$\frac{1}{2}$ to 1 oz. Decoction, Juice of the bark and leaves.

Uses—The fruit is very valuable in habitual constipation and dyspepsia. The *unripe or half ripe fruit* cut up and sun-dried is prescribed in diarrhoea and dysentery, with debility of the mucous membrane, specially useful in chronic diarrhœa and dysentery of children. The *ripe fruit* is sweet, aromatic and cooling when made into

morning *sherbat*, which is made by mixing two ounces of pulp in three or four ounces of water or syrup. It is pleasantly laxative and a good simple cure for dyspepsia. *Bael-marmalade* or aromatised confection is useful at the breakfast during convalescence from chronic dysentery or diarrhœa: for daily use as a preventive during cholera epidemics. It is also given to prevent the growth of piles. The *decoction of the root* and sometimes the *stem-bark* is useful in intermittent-fever, also in hypochondriasis and palpitation of the heart. The *fresh juice* of the leaves is given with the addition of black-pepper in anasarca with costiveness and jaundice, and when diluted with water or honey it is a highly-praised remedy in catarrh and feverishness; it is largely used in Bengal as antibilious and febrifuge. The astringent *rind* of the ripe fruit is employed in acute dysentery; its usefulness is enhanced by the combination of opium. *Powder* of the dried pulp is given with treacle in recent dysentery with griping pain in the loins and costiveness. Dose as tonic is from 12 to 15 grains of the powdered pulp; as a febrifuge and antiscorbutic it is from 16 to 20 grains and as nauseant and antidysenteric it is from 20 grains to 2 drachms. Powder is more useful in acute diseases and the syrup in the chronic. For a child the following is an excellent prescription in cases of chronic diarrhœa:—Powder of unripe fruit six grains, compound powder of kino one grain and pure white sugar in fine powder one grain; mix together: this dose is to be given two or three times a day. The pulp of the fresh fruit mixed with milk and administered with cubeb powder acts as diuretic and astringent on the mucous membranes of the generative organs; therefore useful in chronic gonorrhœa.

The small unripe fruit is given with fennel seeds and ginger in decoction for piles. Two tolas of the juice of the *bark* is given with a little cumin in milk as a remedy for poverty of the seminal fluid. The following are some useful household formulas:—

1. Take of Bael fruit 1, Holarrhena antidysenterica 2, Indian sweet fennel seeds 1, chebulic myrobalan (*Bal harda*) 1 and Sugar 3 parts. Mix, reduce the whole to a powder, then add *Ispaghula* (Plantago Ispaghula or Spogel seeds). Dose:—One to three drachms. Useful in subacute and chronic dysentary.

2. Take of Bael fruit 4 drs., *Gajapippali* (Scindapsus Officinalis) 1 dr., cuscus grass (Andropogon Muricatus) 1 dr., *Lodhra* (Symplocos Racemosa) 1 dr. Mix and reduce the whole to a fine powder. Dose:—20 to 30 grains. Useful in chronic diarrhœa and dysentery.

3. Take of Bael (dried pulp) 2½ drs., dried ginger ½ dr., Indian sweet fennel seeds (*Sonpha*) 2½ drs., *Mocharasa* (Silk cotton tree's gum) 1 dr., honey 2 drs., Sugar 3 drs. Mix and reduce the whole to a fine powder. Dose:—½ to 1 drachm. Used in chronic dysentery and dysenteric diarrhœa of hot climates.

4. Bael pulp 1 dr., Catechu 1 dr., Pomegranate bark 1 dr. Mix and make a powder. Dose:—½ to 1 drachm. Used in dysentery and chronic diarrhœa.

5. Rind of the Bael fruit 5, *Gulancha* (Cocculus Cordifolius) 4 parts. Mix and make a decoction in the usual way; when ready add honey. Given to check vomiting.

6. *Bilva Panchaka* (Five drugs including Bael):— Take of Bael fruit 10, *Mocharasa* 10, Kernel (seed) of

Mango 7, Nutmeg (*Jaephala*) 2 and Opium 1 part. Mix and reduce the whole to a powder. Dose:—20 to 40 grains given in chronic dysentery.

Aeschynomena Grandiflora.—See Agati Grandiflora.

Aeschynomena Sesban.—See Sesbania Aegyptiaca.

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24. AGARICUS ALBUS.

(*N. O.*—FUNGI.)

Bom.—Gharicum. *Cash.*—Jangli Bulgar. *Eng.*—White Agaric; touchwood: *Hind.*—Chhattri. *Punj.*—Kiain.

Habitat.—Punjab; Asia Minor.

Parts Used.—Fungus of the Larch, Quercus and Fagus species.

Constituents.—Resin, bitter extractive matter, gum, vegetable albumen and wax. The true active principle agaric, fungic or larcic acid; also phosphoric acid, potash, lime, ammonia, sulphur etc. Agaricin the resin contains 97 p. c. of agaric acid and 3 p. c. of agaricol. Agaric acid occurs in minute crystals, soluble in alcohol, chloroform, and ether; boiled with water it forms a gelatinous solution. Dose:—$\frac{1}{6}$ to 1 grain, given to check night sweats.

Action.—Astringent, cathartic and lactifuge.

Preparations.—Extractum agarici, dose:—20 to 60 minims; Liquid extract, dose:—3 to 20 minims. Tincture (1 in 10) dose:—20 to 60 minims.

Uses.—It is given in large doses with honey in eruptive fevers to promote the rising of eruptions. *Agaricin* in small doses is given to check diarrhœa. It is very useful in checking colliquative night-sweats, bronchial secretion

and hæmoptysis. Applied to the breasts after weaning it stops the secretion of milk. It checks bleeding from leech-bites.

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25 AGARICUS OSTREATUS or A. Palmalus.

(*N. O.*—FUNGI.)

Eng.—Agaric of the Oak; Touchwood; Oyster mushroom. *Mal. and Kan.*—Panasalambe.

Habitat:—The fungus growing on Artecarpus Integrifolia (Jack tree.)

Parts Used:—The fungus.

Constituents:—Resin, organic acid and gelatine.

Action & Uses:—Astringent. A paste of it is applied to the gums in aphthæ; it prevents excessive salivation. It is also given internally in dysentery and diarrhœa and applied to the mouths of children suffering from aphthæ.

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26. AGATI GRANDIFLORA.

(*N. O.*—LEGUMINOSÆ.)

Sans.—Agastya, Vaka. *Ben.*—Buko. *Mah.*—Agasti. *Tel.*—Avisi. *Tam. and Mal.* Akatti. *Can.*—Agase. *Sunderbans:*—Bagful.

Habitat.—Cultivated in South or West India in the Ganges valley and in Bengal.

Parts Used.—The bark, leaves, flowers, gum and roots

Constituents.—The bark contains tannin and gum.

Action.—The bark is very astringent; leaves are aperient.

Preparations.—Decoction (1 in 20) of the bark dose:—½ to 1 oz. Juice (of the root), dose:—1 to 2 drachms. Paste of the root and poultice of the leaves for local applications.

Uses.—The *bark* is given as infusion in the first stages of small-pox and other eruptive fevers. Equal quantities of the *root* of the red-flowered variety and the root of the black datura (thorn-apple) or stramonium rubbed into a paste with water is applied to painful or rheumatic swellings. The juice of the *leaves and flowers* is a popular remedy for nasal catarrh and headache when it is sniffed up the nostrils. It causes a very copious discharge of fluid and relieves pain and sense of weight in the frontal sinuses. For children 5 drops of the leaf-juice in honey will suffice. The juice of the flowers is squeezed into the eyes to relieve dimness of vision. A *poultice* of the leaves is a popular remedy for bruises. For congenital bronchitis or cold in babies 2 drops of the leaf-juice mixed with 8 to 10 drops of honey is applied carefully with the tip of a finger to the fontenal in the infants by the midwife.

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27. AGAVE AMERICANA.

(*N. O.*—AMARYLLIDEÆ).

Sans.—Kantala. *Eng.*—American aloe: Carata. *Hind. and Duk.*—Rakaspattah. *Ben. and Mah.*—Jangli-ananash. *Guz.*—Jangli-kanvar. *Tel.*—Rakashimatalu. *Tam.*—Anekatalai. *Can.*—Anekatali. *Mal.*—Eroppakaita.

Habitat.—The century plant naturalised in many parts of India.

Parts Used.—Roots, Leaves and Gum.

Constituents.—The juice of the stalk contains a sugar-yielding alcohol from which is obtained a fermented intoxicating drink called *pulque* in Mexico. *Agavose* is an inactive sugar.

Action.—Root is diuretic and anti-syphilitic. Sap is laxative, diuretic, emmenagogue and antiscorbutic.

Preparations—Decoction; juice from leaves; sap or gum from the root.

Uses.—Its *roots* are used with sarsaparilla in the form of decoction (4 ounces to 1 pint of water) in syphilitic complaints; the *juice* which yields on cutting the leaves is also useful in syphilis. The sap is useful in scurvy; the dose is two fluid ounces. The fresh juice is a good external application to bruises and contusions. The *gum* exuding from the leaves and root is used as a cure for toothache. The *pulp af the leaves* mixed with sugar is a popular remedy for gonorrhœa. The large fleshy leaves cut into thin slices may be used as a poultice.

28. AILANTHUS EXCELSA.

(*N. O.* SIMARUBEÆ).

Sans.—Madala Aralu: Mahanimba: Atarusha. *Hind., Ben. and Duk.*—Maharukha. *Mah.*—Mahanimb: Adusa. *Uriya.*—Mahanim: Mahala. *Tel.*—Peddamanu. *Tam.*—Perumaruttu. *Can.*—Doddamani or hiremara. *Guz.*—Adusa: Motho-araduso. *Mal.*—Perumaram.

Habitat.—Common in many parts of India, U. P., Behar, Bombay, Western Peninsula, Carnatic, Coromandal Coast.

Parts Used.—Bark and Leaves.

Constituents.—The bark contains an important bitter principle, known as *Ailantic Acid*, It is waxlike, reddish-brown, easily soluble in alcohol, water, ether etc. It is related to *Quassin*, probably identical with *Codrin* and *Samaderin* obtained from other members of this species.

Action.—Bitter tonic and febrifuge. The bark is also expectorant and antispasmodic.

Preparations.—Infusion of the bark, (1 in 20), dose:—1 to 2 ounces. Ailantic Acid, dose:—1 to 3 grains; n large doses it causes nausea, vomiting and purging.

Uses.—The *bark* and the *leaves* in infusion are reputed as tonic in debility after child-birth; especially useful in dyspepsia. The *juice* of the leaves is usually administered in *Khir* or the juice of the fresh bark is given with cocoanut milk and treacle or with aromatics and honey, it is said to stop after-pains. The bark and the leaves in infusion are useful in bronchitis and asthma The bark is a good substitute for *Kuda* bark. *Ailantic Acid* is given as tonic and alterative in dyspepsia with constipation.

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29. AILANTHUS MALABARICA.

(N. O.—XANTHOXYLACEÆ).

Sans.—Mahanimba, Pishachavraksa. *Mah.*—Guggula-dhup. *Bom.*—Maddedhupa; baga-dhupa. *Tel.*—Maddipalu or Pedda-manu. *Tam* and *Mal.*—Perumaram, Mattipal. *Can.*—Hemmara; Dhup.

Habitat.—Malabar Coast and Travancore and Ceylon.

Parts Used.— Bark, fruit and gum.

Constituents.—The gum obtained from the bark contains 77 p. c of pure resin of a strong balsamic odour, the rest being impurities. Resin is soluble in alcohol. There are 3 varieties of the resin in the market—the soft, the flat and the hard; the first variety is most useful.

Action.—The bark is tonic febrifuge. The gum is stimulant. The bark contains no tannin and therefore

is administered like calumba and quassia with the preparation of iron.

Preparations.—Powder and Infusion of the Bark.

Uses.—The *bark* is bitter and is given in dyspepsia. The fresh *juice* of the bark (one ounce) with equal quantity of curd given morning and evening proves beneficial in dysentery and bronchitis. The *resin or gum* is useful in dysentery in the form of powder. Milk mixed with the *powder* and strained is given in dysentery: it is a good stimulant in bronchitic affection. It is also used for incense: when burnt it gives out fragrance. The *fruit* triturated with mango and mixed with rice is said to be useful in cases of ophthalmia.

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30. ALANGIUM DECAPETALUM or A. Tomentosum or A. Lamorokii or A. Hexapetalum.

(*N. O.*—CORNACEÆ.)

Sans.—Shoedhanam, Ankoela, Ankoeda. *Eng.*—Sage-leaved alangium. *Hind.*—Akola; Dhera. *Ben.*—Akar-kanta. Baghankura. *Guz.*—Onkla. *Mah.*—Ankoli. *Tel.*—Ankolamu. *Tam.*—Ankolum; atikoevam. *Can.*—Ankoelaemara. *Mal.*—Ankolam, Chemmaram.

Habitat—Common in tropical forests of South India and Burma; occasionally found in gardens.

Parts Used.—Root, root-bark, seeds and leaves.

Constituents.—Non-crystallizable bitter alkaloid '*alangine*' soluble in alcohol, chloroform and ether, but insoluble in water.

Action.—Alterative; the root-bark is emetic in doses of 50 grains: in smaller doses i.e., 10 grains it is

nauseant and febrifuge. The root is laxative and anthelmintic; the fruit is cooling and nutritive.

Preparations.—Infusion and decoction of root powder of root-bark.

Uses.—The *root-bark* is an antidote for several poisons. Rubbed in rice-water it is given with a little honey in diarrhœa. It has a reputation in leprosy and syphilitic and other skin diseases; it is also useful in simple continued fevers. The *root* in infusion or decoction is given with ghee in dog-bites. It is also useful in worms, colic, inflammations and poisonous bites including snake-bites. The *oil of the root-bark* is said to be a useful external application in acute rheumatism. The *fruit* is said to be useful in burning of the body, consumption and hæmorrhages. Dose of the root-bark as an alterative tonic is from two to five grains in powder. In doses of 6 to 10 grains, it is used as diuretic in ascitis. The root-bark is said to be alexiteric especially in cases of bites from rabid animals.

Albizzia Amara.—See Mimosa Amara.

Albizzia Lebbeck.—See Acacia Speciosa.

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31. ALEURITES MOLUCCANA or A. Triloba.

(*N. O.*—Euphorbiaceæ.)

Sans.—Askhota. *Eng.*—Indian Walnut; Filberts; Candlenut. *Hind.*—Akhrot. *Ben.*—Jangli akrot, Bangle-akrot. *Can.*—Nat-akrodu. *Mah.*—Ramakrot. *Tam.*—Woodooga.

Habitat.—This plant, which is a native of the Malay Archipelago is found wild in many parts of South India.

Parts Used.—The nuts (kernel) and oil, called *Kakm* or *Kakune*.

Constituents.—The kernel contains cellulose, fat, organic matter, mineral matter and ash containing lime, magnesia, phosphoric anhydride etc. The seeds yield a fixed oil which contains oleine, myristin, palmitin, stearin and an acrid resin in which resides the purgative principle It is known as *Kakmi* oil or artist's oil since it is used in oil painting.

Action.—Mild aperient like castor oil. The kernel has aphrodisiac properties.

Uses.—The *kernels* of the nuts, which taste like English walnuts, yield by expression a very agreeable fixed oil, which has a mild aperient action like castor oil. The *juice* of the fruits or nuts is a remedy for worms, piles etc. The fruits or nuts soaked in the oil and placed in the anus relieve piles.

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32. ALLIUM CEPA or A. Porrum or A. Ascalonicum.

(*N. O.*—LILIACEÆ.)

Sans.—Palandu. *Eng.*—Onion. *Hind.*—Pyaj. *Ben.*—Pyaj; Pulantic. *Guz.*—Dungari. *Mah.*—Kanda. *Tel.* & *Can.*—Neerulli *Tam.*—Vangayam. *Mal.*—Eerulli. *Burm.*—Kyet-th-woni-ni.

Habitat.—Cultivated all over India.

Parts Used.—The bulb and seed.

Constituents.—The bulbs contain an acrid volatile oil which contains sulphur. The outer skins of the bulb contain a yellow colouring matter Quercetin.

Action.—The oil contained in the bulb is stimulant, diuretic and expectorant. The bulb is emmenagogue;

externally it is stimulant and rubefacient. Roasted it acts as demulcent both internally and externally. The juice of the onion is aphrodisiac, generally mixed with honey, ginger-juice and ghee.

Uses.—The onions are largely used as an article of food and condiment. The *bulbs* are useful in fever dropsy, catarrh and chronic bronchitis; mixed with common salt the *onions* are a domestic remedy in colic and scurvy; eaten raw they are diuretic and emmenagogue. Roasted or otherwise they are applied as *poultice* to indolent boils, bruises, wounds &c., to relieve heaty sensation: applied to the navel in dysentery and bodyheat; juice is used like smelling salts in faintness, in infantile convisions, headaches, epileptic and hysterical fits; it is dropped hot into the ear to relieve earache; and applied hot to the soles of feet as a derivative in convulsive disorders; it is sniffed in epistaxis, it is applied to eyes in dimness of vision and locally to allay irritation of insect bites, scorpion stings and also in skin diseases. It is given as an antidote in tobacco-poisoning. Mixed with mustard oil in equal proportions it is a good application to rheumatic pains and other inflammatory swellings; onions are eaten to mitigate cough in phthisis; mixed with vinegar they are useful in cases of sorethroat. Cooked with vinegar they are given in jaundice, splenic enlargement and dyspepsia. In malarial fevers they are eaten twice a day with two or three black peppers with remarkable relief. Onions eaten wiih jaggery stimulates growth of children. A decoction of the onions is found to benefit much the cases of strangury and extreme heaty sensation; and roasted onions mixed with cumin sugar-cāndy and cow's ghee is a nice demulcent of great benefit in piles.

Allium Macleani.—See Orchis Mascula.

33 ALLIUM SATIVUM
(*N. O.*—LILIACEÆ)

Sans.—Lasuna, Ugragandha, Bhutagna, Mahusudha. *Eng.*—Garlic. *Hind and Ben.*—Lasun. *Pers.*—Sir. *Guz.*—Lasan; Shunam. *Mah.*—Lasura. *Tel.*—Tellagadda. *Tam.*—Vellapundu *Mal.*—Vellulli. *Can.*—Bellulli.

Habitat.—Cultivated all over India.

Parts Used.—The bulb and oil.

Constituents.—An acrid volatile oil, starch, mucilage, albumen, sugar etc. The volatile oil obtained by distillation contains allyl, propyl disulphide and other sulphur compounds. It is a clear limpid liquid of dark-brown or yellow colour, of very repulsive odour and of repugnant taste.

Action.—Stimulant, carminative, emmenagogue, anti-rheumatic and alterative. The medical properties are due to the oil of which the dose is 1 to 2 minims. *Externally* the bulb is used as resolvent. Garlic acts as vermifuge, expelling round worms.

Preparations.—Oil, Liniment, Poultice, Compound Decoction and Powder.

Uses.—The *seeds* yield an aromatic *oil* of a stimulant nature, prescribed *internally* to prevent recurrence of the cold fits of intermittent fever; *externally* it is used in paralytic and rheumatic affections. As resolvent the *garlic* is applied to indolent tumours; *internally* it is given with common salt in affections of the nervous system, headache, flatulence, hysteria etc. It is applied like onions to the nose in cases of fainting. In the form

of confection it is given in rheumatism. Used as a *liniment* it acts very beneficially in infantile convulsions and other nervous and spasmodic affections, relaxed sore-throat, in asthma, general paralysis, facial paralysis, gout, and sciatica. Bruised garlic and onions are applied to the chest as *poultice*. When eaten in cold season it is said to ward off attacks of rheumatism and neuralgia. Mustard or cocoanut oil in which garlic has been fried is an excellent application for scabies and maggots infesting ulcers. Its juice mixed with salt is applied to bruises and sprains and also to relieve neuralgia and earache. Garlic is rubbed over ringworm with relief. A clove or two of garlic boiled in half ounce of gingilly oil is useful as ear-drops in atonic deafness and to allay the pain in otorrhœa. *Expressed juice* is applied in case of elongated uvula with some good effect, like that of silver nitrate. Like onion, garlic produces copious diuresis and therefore it is used in dropsy or anasarca.

Decoction of garlic described by Chakradatta:—Take of garlic 32 tolas, water 4 seers, milk 4 seers; boil together till the water is evaporated, and strain. This decoction in milk is given in small doses, in hysteria, flatulence, sciatica and heart disease.

Svalparasuna pinda:—Take of garlic 12 tolas, assafœtida, cumin seeds, rock salt, sonchal salt, ginger, long-pepper and black-pepper each one-eighth of a tola; powder them finely and mix. Dose is about 20 grains every morning with decoction of the root of the castor oil plant, in facial paralysis, hemiplegia, sciatica, paraplegia and convulsive affections. This medicine should be continued for a month

34. ALOCASIA INDICA or A. Montana.

(*N. O.*—Acoraceae.)

Sans—Mooka *Eng.*— Great-leaved Caledium. *Hind.*-Alu. *Guz.*—Alavu. *Mah. & Kon*:—Kasalu. *Ben.*—Man-kochu. *Can*:—Genasoo.

Habitat:—Indigenous in India.

Parts Used:--Root-stock or tubers; Pitioles and Stems.

Constituents:—Contains, acicular crystals of Oxa-late of time to which its acridity is due.

Action.--Digestive, laxative, diuretic, lactagogue and styptic.

Preparations:--Ash, Juice; *Manmandu* (diet) and Poultice.

Uses.—The *juice of the petioles* is dropped into the ears of children in otorrhoea. *Tubers* made hot are locally applied to painful parts in rheumatism. *Conjee* made of the *root-stock or the dried stems* boiled with rice-flour is given in Anasarca, no other food being allowed to the patient. It is also given in cases of piles and for habitual consti-pation. The ash of the root-stock, mixed with honey is a local application for Aphthae in the mouth. The ash of the root-stock or tuber of *Ran Alu* is given in water for worm-troubles. In anasarca powdered meal of the root-stalk (about a year-old) 8 tolas, powdered rice 18 tolas, water and milk 48 tolas each, boiled together till the water is evapo-rated, is given as diet as a substitute for food. This prepa-ration is called *Manmandu*. It is given from 4 ozs. to 1 pint according to the strength of the patient. No other diet in addition to it is allowed except milk. Besides the nourish-ing effect it affords, oxalate contained therein relieves the

oedema caused by the retention of salts. Because calcium oxalate when administersd has the property of definitely increasing the chlorides and urea in the urine particularly the former both in normal and oedematous conditions.

The *juice of the leaves* or the water resulting from the boiling together of the stems and leaves is given with ghee for 3 consecutive days in colic and constipation.

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35. ALOE BARBADENSIS.

(*N. O.*—LILIACEÆ).

Sans:—Kumaree: *Eng.*—Indian aloes. *Hind.*—Ghikanvar. *Ben.*—Ghrit-kumari. *Guz.*—Kunvar *Mah.*—Pivalaboel ; Korphad. *Tel.*—Kalabanda. *Tam*—Kattalai. *Can.*—Kathaligida. *Mal.*—Kattavala. *Duk.*—Musanbar. *Punj.*—Elwa. *Cash.*—Mussabar.

Habitat.—Cultivated throughout India in many varieties some of which run wild as on the coasts of South India.

Parts Used.—The expressed and dried Juice of the leaves and Pulp.

Varieties.—Aloe Litoralis (Seaside aloes) ; Arabian Aloes or Aden Aloes known as *Yamini* or *Moka*, yielded by *Aloes Indica*. It is of a blackish colour, shining on the surface, porous and translucent ; when held before the sunlight the colour changes to red. It is also known as *Bandhano Eliyo* and *Petino Eliyo*. The former is mixed with stone, clay etc., and is wrapped up in mats ; the latter is clean and is packed in boxes. Cape Aloes is yielded by Aloes Spicata. Aloes Socotrina (B.P.), Zanzibar Aloes, Bombay Aloes are other varieties.

Action.—Stomachic-tonic in small doses; in large doses, purgative and indirectly emmenagogue.

Preparations.—Confection, Tincture, Lotion and juice.

Uses.—It is a favourite remedy for intestinal worms in children. Dissolved in attar of roses, or in water with borax and a little opium added, strained, the water or *lotion* is applied to eyes in various affections of the eye, as in catarrhal and purulent ophthalmia. Dissolved in spirit it is used as a hair-dye to stimulate hair-growth. A sweet *confection* prepared from the pulp of the leaves is given in piles. The *pulp* with honey or saltpetre and turmeric is given in coughs and colds. To correct its griping effect confection of roses and mastich is added. In colic and pneumonia of infants its *inspissated juice* with a little gum assafœtida is given internally in doses of 1 grain; it may also be given in mother's milk with the addition of a little borax. The *juice of the leaves* is applied to inflamations. The *pulp* washed in cold water and then mixed with a little burnt alum is a good remedy to persons predisposed to apoplexy. The following Ayurvedic preparation known as *Kumari Asava* is useful in several ailments and it is prepared thus :—Take of Aloe-juice 100, Jaggery 20, Cannabis Indica 5 and water 50 parts. Make a decoction; to this when ready add honey 1, flowers of Woodfordia Floribunda 6, Nutmeg, Cloves, Cubebs, Indian Spikenard (*Jatamanshi*), dried unripe spikes of black-pepper, root of Plumbago Zeylanica (*Chitraka*) mace or the arillus of Myristica Officinalis (*Jaipatri*), the gall of Rhus Succedanea (*Kakadsingi*), Belleric myrobalan (*Behada*), root of Aplotaxis Auriculata (*Kushta*) each 1 part, *Tamra Bhasma* and *Loha Bhasma* (prepared powders of Copper and Iron) each ½ part. Mix, keep for about a month and allow it to ferment. Used in general

debility, cough, dyspnœa, asthma, consumption, piles, epilepsy, colic and tympanitis.

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36. ALOE LITORALIS.

(*N.O.*—LILIACEÆ).

Sans.—Ikshuramallika, Kanya, Kumari. *Eng.*—Small aloe. *Hind.*—Chhotakanvar. *Ben.*—Ananash. *Guz.*—Nahani kanvar. *Mah.*—Lahani kumari, kalaboel. *Tel.*—Chinikala-banda. *Tam.*—Chirukattalai, Kariambolam. *Can.*—Lolisara. *Mal.*—Kattavala. *Punj.*—Elwa. *Cash.*—Musabar *Cing.*—Karibolam. *Burm.*—Mo.

Habitat.—This has become quite naturalised on the southern coast of the Madras Presidency.

Parts Used.—The juice from transversely cut leaves inspissated by heat or solidified without the aid of heat, leaves and root.

Constituents.—Aloin, resin 30 to 50 p.c., volatile oil and ash 1 p.c., also aloetic and chrysamic acids. Aloin (B. P.) is a neutral active principle obtained by digesting aloes in alcohol, boiling, filtering and crystallizing. It occurs in tufts of yellow acicular crystals without any odour.

Action.—Laxative, tonic and emmenagogue.

Preparations.—Decoction, juice, pulp and paste.

Uses.—It is a laxative tonic useful in diseases of the spleen; the *decoction of the root* is prescribed as a febrifuge; very largely used in Mysore as an aperient and an emmenagogue. The tender *leaves* mixed with the powder of cumin seeds and sugar-candy are said to be an excellent remedy in dysentery characterised by bloody stools. The *juice of the leaves* mixed with a little opium and applied to the forehead relieves headache; mixed with gingily oil and

boiled it makes a fine hair-oil useful in cases of sleeplessness. The *pulp* of the leaves well washed in cold water is prescribed as a refrigerent medicine in conjunctivitis, with a small quantity of sugar-candy; the same pulp so purified and with the addition of a little burnt alum is considered a valuable application in cases of ophthalmia. The freshly expressed juice is in almost universal use as an external refrigerent application to all external or local inflammations. Mixed with butter it is applied to ulcers to relieve the burning sensation. In glandular enlargements and spleen disease the *juice of the leaves* is given with the addition of powdered turmeric. The following is a useful prescription, generally employed in Indian households:— Aloe leaves sliced, three ounces, common salt, 3 drachms; heat them to boiling point, strain, and add pure white sugar, one ounce; this is for one dose, to be taken cold, early in the morning. The *tuber ground into paste* with turmeric powder added is applied as *lep* to inflamed or diseased breasts

Aloexylum Agallochum.—see Aquilaria Agallocha.

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37. ALPINIA GALANGA.

(*N.O.*—ZINGIBERACEÆ).

Sans.—Sugandhavacha; Mahabaravach; Kulanjana: Dhumparastma. *Eng.*—Java Galangal; grand or greater galangal; galanga cardamoms. *Duk, Ben, Bom and Hind.*—Saphed-panaki-jhad; Barakalanjana; Kosthe Kalanjana. *Can.*—Dhumarasmi. *Mal.*—Chitta-ratta. *Tam.*—Periareta. *Tel.*—Pedda-dhumpa.

Habitat.—South India and Bengal.

Parts Used.—Rhizome and fruit.

Constituents.—Camphoride galangin and alpinine.

Action.—Aromatic, stimulant and bitter.

Preparations.—Powder (dose–5 to 10 grains). Tincture (1 in 10) dose :—½ to 1 drachm. Paste made with any bland oil to apply locally in skin diseases.

Uses.—Used in impotence, dyspepsia, fevers, catarrhal affections, rheumatism, incontinence of urine and also advocated in diabetes mellitus and said to diminish the quantity of urine ; it is used to destroy bad smell in the mouth and in other parts of the body ; used to improve the voice in throat affections.

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38. ALSTONIA SCHOLARIS.

(*N.O.*—Apocynaceæ.)

Sans.—Saptaparna : visaltvak : brihatvaka. *Eng.*—Dita Bark. *Hind.*—Datyuni ; Chatian. *Ben.*—Chhatin. *Mah.*—Satveen. *Tel.*—Palagaruda; Aedakularitichettu. *Tam.*—Aelilappalai; wodrasi. *Can.*—Hale. *Mal.*—Daivapal, aerilampal. *Kon.*—Santhni-rooku ; Kadusallc-rooku.

Habitat.—Common throughout India.

Parts Used.—Leaves and bark ; milky juice.

Constituents.—The bark contains alkaloid "*ditamine*," two bases:—*echitamine* and *echitanine*, also *echicaoutchin*, an amorphous yellow mass. *Echicerin* in acicular crystals ; *echitin* in crystallized scales *echitein* in rhombic prisms and *echiretin* an amorphous substance.

Action.—Stimulant, carminative, stomachic, bitter tonic, astringent, aphrodisiac; expectorant, febrifuge and anti-periodic. *Ditamine* or *ditanin* possesses anti-periodic properties equal to the best sulphate of quinine without its disagreeable secondary symptoms ; but its febrifuge effect is not lasting.

Preparations and their doses.—Of the infusion, 1 to 2 ounces ; of the tincture, 1 to 2 drachms diluted in

water and of *ditanin* 5 to 10 grains given two or three times a day. An extract is prepared from the fresh bark and given in milk in cases of leprosy. It is also used as an anthelmintic.

Preparation of *Amritashtakapachana*--Take of the bark of Alstonia scholaris, *gulancha*, leaves of Adhatoda vasica and Trichosanthes dioica (*patola*), tubers of Cyperus rotundas, Calamus rotung (*vatesa* or *vatra*), catechu and *nim* leaves and prepare a decoction in the usual way. Dose --One to two ounces two or three times a day.

Uses.--The *bark* is valuable in debility and after-effects of fever, also in chronic diarrhœa, dysentery and in catarrhal fever. The *milky juice* is applied to ulcers and to rheumatic pains ; mixed with oil and dropped into ear it relieves earache. The *tincture* of the bark acts in certain cases as a powerful galactagogue. The *juice of the leave s* with that of fresh ginger-root or zedoary is administered to women after confinement.

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39. ALTHAEA OFFICINALIS.

(*N. O.*---MALVACEÆ.)

This is the English marsh-mallow which yields gui-mauve the sweet soft lozenges of which are used for sore-throat.

Hind. and Bom.—Gulkhairu; Gul-i-khere (flowers). *Tam.*—Shemaitute. *Pers.*—Tukm-e-khitame (fruits; carpels) or Reshai-i-Khitame (roots). *Eng.*—Marsh mallow root.

Habitat.—Cashmere,

Parts Used.—Flowers, Carpels, Leaves and Root.

Constituents.—The root contains a little starch, nearly 20 per cent of gum or mucilage, some uncrystallizable sugar and a crystallizable principle and other

unimportant constituents. The crystalline principle *althaein* "seems to be identical with the asparin" of asparagus.

Preparations.—Decoction, powder and syrup.

Action & Uses.—The plant is suppurative and emollient. The *leaves* are used for poultice and fomentation. Mixed with oil the *leaves and flowers* are applied to burns and parts bitten by venomous reptiles. Internally the *flowers* are expectorant and form an ingredient of various cough mixtures. The *carpels* are useful in urinary complaints and coughs. The *root* is given as a demulcent in irritable state of the respiratory and digestive passages, and in irritability of the bladder and intestines. Its *decoction* is used as an emollient enemata in irritability of the vagina or rectum. The following are useful household remedies :—

1. Take of Marsh mallow root 4, its carpels 4, Bonduc seed 4, *Gokharu* 4, cubebs 5, rhizome of Iris Pseudocorus (*Pakhanabheda lakeri*) 2, Sugar 6, Black pepper 1 parts. Mix and make a powder. Dose :—grains 10 to 20; used in urinary complaints, scanty urine, gonorrhœa, etc.

2. Take of Marsh mallow root 4, its carpels 5, Liquorice root 6, the flowers of Viola Odorata (sweet-scented Violet or (*Guli-Banaphsha*) 4, Figs 5 Black raisins 5 and *Trikatu* 2 parts. (Trikatu is a compound of equal parts of *pipali*, *miri* and *sunta*). Mix and make a decoction. Dose:—½ to 2 drachms. Used in cough, asthma, etc.

3. Macerate 3 parts of marsh mallow root in 40 parts of water for 12 hours; strain, press, filter, until 32 parts have passed through. To this add 64 parts of sugar

dissolve, warm and heat the syrup to boiling; when cold skim and strain through flannel. This syrup is used as a demulcent in irritation or inflammation of mucous membranes.

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40. ALTINGIA EXCELSA
(*N.O.*—HAMAMELIDEÆ.)

Sans.—Sillhaka. *Hind., Mah., and Can*—Silaras. *Mal.*—Rasamala. *Burm.*—Nan-ta-yok. *Eng.*—Storax. *Assam.*—Jutili. *Tam.*—Neri-uriship-pal.

Habitat:—This is a magnificent tree of the Indian Archipelago, common also in Burma and Assam.

Parts Used:—The resin (known as storax) obtained from the tree.

Constituents:—The storax is a mixture of Cinnamic acid, vanilion, styrol, styracin etc.

Action:—Stimulant expectorant, anodyne and anti-phlogistic.

Uses:—It is useful in affections of the throat and skin diseases; it is smeared over the abdomen of children to relieve colicky pains; it is applied in case of orchitis over the inflamed testicle covered over with dry tobacco leaves; useful especially in early stages of hydrocele.

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41. AMARANTHUS PANICULATUS or A. Frumentaceus or A. Anacardan or A. Farinaceus.
(*N. O.*—AMARANTHACEÆ.)

Ben.—Chuka; Bathu. *Guz.*—Rajagoro. *Duk.*—Rajgira. *Pers.*—Taje Khuras; Bustan Afroz. *Hind.*—Chua-marsa; ganhar. *Bom.*—Kahola-Bhaji.

Habitat:—Throughout India.

Parts Used:—Seeds.

Constituents:—The seeds contain all the food-elements in standard ratio, like an ideal food.

Action & Uses:—It is a perfectly wholesome article of food used for purifying the blood; it is beneficial in piles and in strangury it acts as diuretic. In scrofula, it is locally applied to scrofulous sores and also administered in the form of liquid. It is one of the most important articles of food with the hill-tribes.

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42. AMARANTHUS POLYGAMUS or A. Hypochandriacus

(*N. O.*—AMARANTHACEÆ.)

Eng.—Prince's feathers; Cock's comb. *Ben.*—Sveta-murga. *Guz.*—Lapadi; safed murga. *Hind.*—Sarvari; Deokati. *Mah.*—Koordoo. *Tel.*—Gurugu. *Can.*—Goraji.

Habitat.—Throughout India. Tropical Asia.

Parts Used.—The seeds, leaves and root.

Action.—Astringent and nervine tonic; anodyne.

Preparations.—Decoction or Infusion (1 in 10); dose.—1 to 2 ozs. Poultice.

Uses.—It is given in diarrhœa, seminal debility, leucorrhœa and menorrhagia. The *ashes of the root* are used for the same purposes as the ashes of *Aghada*. A poultice of the *leaves* besmeared with honey is used as a cooling application to inflamed and painful parts such as buboes, abscesses etc. The whole plant is used as an antidote for snake-poison and the *root* as a specific for colic. It is also considered as a lactagogue and boiled

with pulses and given to cows. The root is regarded as a specific in gonorrhœa and also advocated in eczema.

Amomum Galanga.—See Alpinia Galanga.

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43. AMMONIA BACCIFERA or A. Vesicatoria.

(*N.O.*—LYTHRACEÆ.)

Sans.—Agni-garba. *Ben. and Hind.*—Dadmari; Jangli Mehudi. *Punj.*—Dadarbootie. *Bom. & Duk.*—Ban mirich; Aginbuti; Bhura-Jambol. *Tam.*—Kallurivi; nirumol; neruppu; *Tel.*—Agni-vendra-paku. *Mal.*—Kallur Vanchi.

Habitat.—Very common throughout India in marshy places.

Parts Used.—The herb and leaves.

Constituents.—Resin, glucose and perhaps an active principle.

Action.—The leaves are exceedingly acrid, irritant and vesicant.

Uses.—The *leaves* are used by the country people to raise blisters, by applying them to the skin for half an hour or a little longer. Their ethereal *tincture* has been tried with success and found equal to liquor epispasticus. The *leaves or the ashes of the plant* mixed with oil are applied to cure herpetic eruptions. The plant fresh or dried is administered in *decoction* with ginger and cyperus root for intermittent fever. Decoction of the dried plant (1 in 20) may be given in doses of 4 drachms or half an ounce. In the Konkan the *juice* is given with water to animals when in heat to extinguish sexual appetite.

Amomum Amarum; A. Aromaticum; A. Xanthioides:—See Elletaria Cardamomum.

Amomum Galanga.—See Alpinia Galanga.

44 AMOMUM SUBULATUM.

(*N. O.*—SCITAMINEÆ).

Sans.—Brihat-upa-kunchika ; Ela. *Hind and Ben.*—Bari-Elachi. *Guz.*—Moto-elachi. *Mah.*—Moto-eldori. *Tam.*—Peri-elakkay. *Tel.*—Pedda-elakkay; Adavi-ellakkay. *Mal.*—Peri-elav.

Habitat:—Eastern Himalayas.

Parts Used:—Seeds and Oil.

Action & Uses.—The *seeds yield a medicinal oil.* It is an agreeable aromatic stimulant. It acts as a stomachic used to allay irritation of the stomach produced either by cholera or some other affections. The *decoction* of cardamoms is used as a gargle in affections of the teeth and gums. In combination with the seeds of melon it is used as a diuretic in cases of gravel of the kidneys. It is said to be invaluable in certain disorders of the digestive system, marked by scanty and vesical secretion from the intestines ; promotes elimination of bile, and is useful in liver affection such is congestion of the liver, especially where abscess threatens. Dose is 10 grains. It is also useful in neuralgia, in large doses i.e., 30 grains in conjunction with quinine; in gonorrhoea, it is used as an aphrodisiac.

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45 AMORPHOPHALLUS CAMPANULATUS or A. Sylvatacus

(*N. O.*—ARACEÆ.)

Sans.—Arsaghna, (curer of piles); Kunda. *Eng.*—Telugu potato or Amorphophallus. *Bom, Mah, Hind.*—Jangli suran or alu ; Madana masta. *Ben.*—Ol. *Burm.*—Wa. *Tam.*—Karuna kalang. *Mah.*—Suran. *Tel.*—Poti-kunda ; Manchi-kunda-guddae. *Mal.*—Kizhanna; *Can.*—Suvarna-guddah.

Habitat.—India.

Parts Used.—The corm or tubers.

Preparations.—Powder, dose:—5 to 10 grains. Confection known as *Laghu Suruna Madaka* or *Brihat Suran Madaka* containing *madanmust*, treacle, *trikatu* and plumbago-root, equal parts ; dose:—½ to 2 drachms in dyspepsia. (*Trikatu* is a compound of equal parts of *pipli*, *miri* and *sunta*).

Action & Uses.—Stomachic and tonic; used in piles and given as a restorative in dyspepsia, debility etc. It is a hot carminative in the form of a pickle. The *root* is used in boils and ophthalmia, also an emmenagogue. *Tubers* contain an acrid juice which should be got rid of by thorough boiling and washing lest it otherwise irritate the mouth and fauces ; they are regarded good in hæmorrhoids.

Amyris Commiphora.—See Balsamodendron Roxburghii.

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46. ANACARDIUM OCCIDENTALE.

(*N. O.*—Anacardiaceæ).

Sans.—Shoephahara. *Eng.*—Cachew nut. *Hind.*, *Duk*, *Kon.*, *Mal.* and *Guz.*—Kaju. *Ben.*—Hijlibadam. *Tel.*—Jaedimamidi; Moonthamamidivittu. *Tam.*—Mundiri-kai or kottae. *Can.*—Gærumera ; Turukageru. *Mal.*—Kappa-mavu. *Pers.*—Badami Pharangi.

Habitat.—In the coast forests of India and all over South India.

Parts Used.—Fruit, seeds, spirit, bark and oil.

Constituents.—The pericarp or shell of the kidney-shaped nut or seed contains a black caustic fluid or tar containing an acrid oil and anacardic acid; The seeds contain a bland oil similar to olive oil, which is obtained by expression. Juice of the fruit produces a wine ; a

spirit is distilled from it, which has a peculiar flavour. A gum (containing true gum and bassorin) partially soluble in water exudes from the bark.

Action.—Tar or the acrid oil is an irritant and vesicant.

The spirit distilled from the fruit is locally rubefacient.

Preparations.—Acrid oil from the shell; expressed oil from tho seeds; anacardic acid; spirit from the fruit and the kernel of the nut.

Uses.—The *oil obtained from the pericarp* is an effective preventive against white ants etc., and therefore applied to floors and wooden rafters of houses; also used by book-binders. It is useful as an anæsthetic in leprosy and psoriasis, and as a blister in warts, corns and ulcers. It is also a good application for cracks of the feet. The *fruit* is eaten and is a remedy for scurvy; the *kernel* is a good substitute for almond mixture and is also a food for weak patients suffering from incessant and chronic vomiting with 2–3 minims of *dilute* hydrocyanic acid in each dose. The *oil of the kernel* is a mechanical as well as chemical antidote for irritant poisons. It is also a good vehicle for liniments and other external applications.

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47. ANACYCLUS PYRETHRUM.

(*N. O.*—COMPOSITÆ).

Sans.—Akarakarava. *Eng.*—Pellitory. *Hind., Tel. and Ben.*—Akarakara. *Tam.*—Akarakaram. *Mah. and Can.*—Akkalkara.

Habitat.—Bengal and Arabia.

Parts Used.—The root.

Constituents.--It contains a volatile oil and an alkaloid.

Preparations.—Compound Powders, Pills and Paste.

Action & Uses.—The *root* is a valuable sialagogue. It is powerfully irritant and has been found successful in toothache. It is frequently employed in gargles. An *infusion* of this drug is useful in cases of rheumatism. *Powdered root* is given in honey for epilepsy ; it is also used as a snuff in the same disease. Together with *vekhand* (acorus root) it is given rubbed into thin *paste* with water in cases of poisoning with red Iodide of Mercury.

The following compound powder and pill are useful in various complaints :—

1. Take of Pellitory root 4, Indian Colecynth (*Indrayani*) 2, Sal-ammoniac 3, seeds of Nigella Sativa (*Krishnajeeraka*) 2, Black Hellebore (*Kutaki*) 4, and black pepper 4 parts. Mix and make a powder. This is used for blowing into the nose in cases of Epilepsy.

2. Take of Pellitory root 4, Nutmeg 3, Cloves 2, Cinnamon bark (*Dalchini*) 3, Root of Piper Longum (*Pipalimul*), Saffron 2, Opium 1, Cannabis Indica (*Bhang*) 4, Liquoris root 4, Calatropis gigentia root-bark 5, Berries of Embelia Ribes (*Vavadinga*) 3, and Honey 5 parts. Mix, powder and make a pill mass. Dose.--1 to 5 grs. Given to children for irritability of temper, wakefulness, painful dentition, diarrhœa, colic and vomiting.

3. *Akara Karabhadi Churna.*—Take of Pellitory root, dried ginger, saffron, nutmeg, long-pepper, cloves, red sandlewood, each two drachms and opium one drachm. Mix and add sugar six drachms and make a confection.

Dose.—6 grains. Given in impotence and chronic bowel complaints.

Anamirtha Paniculata or A. Cocculus.—See Cocculus Suberosus.

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48. ANANAS SATIVUS.

(*N. O.*—BROMELIACEÆ.)

Eng.—Pineapple. *Hind., Guz., Mal. and Mah.*—Ananas. *Arab.*—Aainunnasa. *Ben.*—Anaras. *Tel.*—Ananash or anas-pandu. *Tam.*—Parangithalai. *Can.*—Anasu: Parangi-kayee.

Habitat.—Cultivated throughout India

Parts Used.—The ripe and unripe fruits and leaves.

Constituents.—The juice contains a proteid digestive ferment which acts equally well in acid or alkaline intestinal secretions. It also contains a milk-curdling ferment. The ash contains phosphoric and sulphuric acids, lime, magnesia, silicia, iron, chlorides of potassium and sodium.

Action.—Fresh juice of the leaves is a powerful anthelmintic and vermicide; with sugar it is purgative. The juice of the ripe fruit is anti-scorbutic, diuretic, diaphoretic, aperient and refrigerent and helps in the digestion of albuminous substances. The juice of the unripe fruit is acid, styptic, powerful diuretic and anthelmintic and emmenagogue; in large quantities it is abortifacient.

Preparations.—Oil or Essence of the juice; Fresh juice of the leaves.

Uses.—Fresh *juice of the leaves* is given with sugar to relieve hiccup; also acts as a purgative. The juice of the *ripe fruit* allays gastric irritability in fever; it is useful in jaundice. The juice of the *unripe fruits* in large quantities causes uterine contractions and ought to be

rigorously avoided by pregnant women. The *oil or essence of pineapple* is used for flavouring purposes in confectionery; it is a solution of ethyl-butyrate in alcohol. This is used to give flavour to Jamaica rum. Pineapple is used for Jam.

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49. ANDROGRAPHIS PANICULATA.

(*N. O.* - ACANTHACEÆ.)

Sans.—Bhunimba; Mahateeta ; Kirata. *Eng.*—The Creat'; king of bitters ; Chiretta. *Hind.*—Kiryat. *Ben.*—Kalmegh. *Pers.*—Nainchavandi. *Guz.*—Kiryato. *Duk.*—Kalafnath. *Mah.*—Olenkirayet. *Tel.*—Nalavemu. *Tam.*—Nilavambu. *Can*—Nelabaevu. *Mal*—Nilavæpu ; Kiriyat.

Habitat—This annual is common in hedge-rows throughout the plains of India, cultivated in gardens in some parts, especially in Bengal.

Parts Used.—The herb, dried stalks and root.

Constituents.—A bitter principle and a considerable quantity of Sodium Chloride. The plant is very rich in Chlorophyle.

Action—The root is stomachic, tonic, antipyretic, febrifuge and cholagogue ; The leaves are anthelmintic.

Preparations—Succus (concentrated expressed juice of the fresh leaves and stalks, 1 in 4 of the drug), dose.—10 to 60 minims. Compound infusion (1 in 20) containing orange peel and coriander, each 1 to 4 of the drug ; dose.—1 to 2 ounces. Compound tincture (3 in 20) containing myrrh and aloes, each 1 to 6 of the drug ; dose.—1 to 4 drachms. Compound Pill containing Cumin, aniseed, cloves and greater cardamoms all in equal parts mixed in the juice of *Kalmeg* ; dose.—2 to 5 grains.

Uses.—The whole plant is intensely bitter and yields its properties readily to water or spirit. *Tincture* of the

root is said to be stimulant and gently aperient. The expressed *juice of the leaves* is a domestic remedy in flatulence and diarrhoea of children; is also anthelmintic; useful in sluggish liver, neuralgia, dyspepsia, in general debility, in convalescence after fevers and in advanced stages of dysentery. During epidemics of influenza a tincture of the plant is highly efficacious in arresting the progress of the disease; very useful in intermittent and remittent fevers, especially when combined with arsenic.

Decoction or strong infusion of the root-stalks is a household bitter tonic and antiperiodic useful in ague or intermittent fevers.

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50. ANDROPOGON CITRATIS.

(*N.O.*—GRAMINACEÆ).

Sans.—Bhustrana; Takratrani. *Eng.*—Lemon grass; sweet-rush; ginger-grass. *Hind.*—Gandhatraṇa or Hareechaha. *Ben.*—Gandha-Bena. *Guz.*—Gandha bela; Lilicha. *Mah.*—Sugandhi-chaha; Gavatichacha: Patichachaha. *Tel.*—Nimmagaddi: Chippa-gaddi. *Tam.*—Karpoorpul. *Can.*—Majjige-hullu. *Mal.*—Chayapul. *Burm.*—Mikkotiu.

Habitat.—Grows wild in gardens throughout India.

Parts Used.—The essential oil and the herb.

Constituents.—the volatile oil; lemon-grass oil; oil of verbena or Indian Molissa oil contains citrol and is obtained by distillation from the fresh plant.

Action.—Stimulant, diaphoretic, anti-spasmodic, and carminative.

Preparations.—Infusion of the leaves (1 in 5) and verbena oil.

Uses.—This grass is generally used in the form of *infusion* (4 ozs. of the grass to 1 pint of boiling water). It

is an excellent stomachic to children; with ginger, sugar, cinnamon, it is given as diaphoretic in fevers; given with black pepper it is useful in disordered menstruation and in the congestive and neuralgic forms of dysmenorrhœa, also in dropsical conditions caused by chronic malaria. It is carminative and tonic to the intestinal mucous membrane, useful in vomiting and diarrhœa; *infusion of leaves* with *pudina*, black-pepper, dried ginger and sugar-candy is useful in colic, flatulence, fever, catarrh, etc. The grass yields a fragrant volatile oil known as *verbena oil* or Indian molissa oil; it is useful in flatulent and spasmodic affections of the bowels, gastric irritability, and is of great value in cholera as it allays and arrests vomiting and aids the process of reaction. The dose is from 2 to 5 minims on a piece of loaf-sugar. *Externally* it is rubefacient. Mixed with an equal quantity of pure cocoanut oil it makes an excellent *liniment* for lumbago, chronic rheumatism, neuralgia, sprains, and other painful affections; it is also a good application for ringworm. For general external use it should be diluted with twice its bulk of any bland oil. A tea made from the leaves is used as stomachic tonic, diuretic and refrigerant.

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51. ANDROPOGON IWARANCUSA or A. Laniger.

(*N.O.*—GRAMINACEÆ).

Sans.—Lamajjaka. *Hind. and Punj.*—Lamjak ; Bur; Panni ; Karankussa ; Ibharankussa ; Ghatzari. *Ben.*—Karankusa. *Mah.*—Pivala-vala. *Gus.*—Pilo-valo.

Habitat.—Lower Himalayan Tracts to the plains of U. P., and Sindh.

Parts Used.—The fibrous roots, and flowers.

Action & Uses.—It is used as a stimulant diaphoretic in gout, rheumatism and intermittent fever; used also in coughs and cholera; used to purify the blood and prescribed in chronic rheumatism. Arabian and Persian Physicians describe it as hot and dry, lithontriptic, diuretic, emmenagogue and carminative and recommend it to be boiled in wine as a diuretic; ground into *paste* it is applied to abdominal swellings; added to purgatives it is given in rheumatism. The *flowers* (calyxes) are used as hæmostatic.

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52. ANDROPOGON MARTINI or A. Calamus Aromaticus or A Pochmodes.

(*N. O.*—GRAMINACEÆ.)

Sans:—Bhustrina; Mulatrina. *Eng.*—Grass of Nemaur: Roosa grass. *Ben.*—Gandhabena. *Hind.*—Merchya. *Mah.*—Rhus sugandhi. *Tam.*—Kamakshapullu. *Tel.*—Kamachi-kassuvu.

Habitat.—Western Ghats, South India, Ceylon, Burma.

Parts Used.—Essential oil from the grass.

Constituents.—Ganiol or the grass oil of Nemaur, or Turkish essence of geranium or *Roosa-ka-attar*; it is volatile, closely resembles lemon grass oil.

Action.—Carminative and stimulant; externally rubefacient.

Preparations.—Oil and Infusion of grass.

Uses.—The *oil* is given on loaf sugar in 1 to 3 minim doses in bilious affections for neuralgia and rheumatic pains. The grass is used to medicate baths in fevers

to cause diaphoresis. Internally its *tea* is used in colic, bilious vomiting and dyspepsia. It also prevents hair from falling after acute fevers, confinement or prolonged lactation. Other uses are like those of cajuput oil.

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53 ANDROPOGON MURICATUS or A. Squar-sus.

(*N. O.*—GRAMINACEÆ.)

Sans.—Usheera, Veeranam. *Eng.*—Cuscus grass. *Hind.*—Khas bena. *Ben*—Khaskhas. *Guz.*—Valo. *Mah.*—Vala. *Tel.*—Kuruvaeru. *Tam.*—Vettivaer. *Can.*—Lavanchi, Mudi-vala. *Mal.*—Ramachham. *Kon.*—Bhanavalo. *Punj.*—Panni.

Habitat.—Coromondel Coast, Mysore, Bengal, Rajputana & Chota Nagpur.

Parts Used.—The fibrous wiry roots from the rhizome.

Constituents.—A volatile oil, resin, coloring matter, a free acid, a salt of lime, oxide of iron and woody matters.

Action.—Tonic, stimulant, anti-spasmodic, diaphoretic, diuretic and emmenagogue.

Preparations.—Powder, dose:—5 to 20 grains. Infusion (1 in 40) dose.—1 to 2 ounces. Paste for external application. Essence or oil or otto, dose.—1 to 2 minims on loaf sugar.

Uses.—Being a cooling medicine it is in the form of infusion a grateful drink in fevers, inflammations and irritability of the stomach. *Externally* a *paste* of the root is rubbed on the skin to remove oppressive heat or burning of the body. By mixing it with red sandalwood and a fragrant wood called *padma kasta* (all in powder) to a

tub of water an aromatic bath is prepared, Its essence or oil or otto is given in two minim doses to check the vomiting of cholera. The grass used in the form of *cigarettes* and smoked with benzoin relieves headache.

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54. ANDROPOGON NARDUS.

(*N. O.*--GRAMINACEÆ.)

Sans.—Guchcha. *Eng.*—Citronella. *Hind.*—Ganjni. *Ben.*—Kamakher. *Mal.*—Ooshadhana. *Cing.*—Maana. *Duk.*—Gand-bel. *Tam.*—Vasanepillu. *Tel.*—Allupu; Kommu.

Habitat.—United Provinces, the Punjab & Ceylon.

Parts Used.—The essential oil and the grass.

Constituents.—The oil contains an aldehyde, a terpene, an isomer of borneol named *citronelol* and acetic and valeric acids.

Action.—Antispasmodic, carminative and stimulant.

Preparations.--Infusion of the leaves and essential oil.

Uses.—The *essential oil* is given in flatulence, spasmodic affections of the bowels and in cholera; dose.—1 to 4 minims on loaf sugar. The *leaves* are occasionally used in the form of infusion in doses of $\frac{1}{4}$ to 2 ounces as stomachic and especially in the bowel complaints of children.

Andropogon Schoenanthus.—See Andropogon Citratis.

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55. ANEMONE OBTUSILOBA or A. Discolor.

(*N. O.*—RANUNCULACEÆ.)

Punj.—Padar; Rattanjog. *Kumaon.*—Kakruja.

Habitat.—Himalaya from Cashmere to Sikkim at an altitude of 9,000 to 15,000 feet.

Parts Used.—The root and seeds.

Constituents —*Anemonin* is found in this plant. It is deposited in rhombic crystals melting at 152 degrees. It is volatile with steam and on exposure to air at ordinary temperatures it is slowly converted into anemonic acid.

Action.—Vasicant and acrid. Anemonin is a toxic substance; it produces paralysis of the central nervous system.

Uses.—The pounded *root* mixed with milk is given *internally with caution* for contusions. It is used *externally* as a blister ; but is apt to produce sores and scars. The *seeds* if given interally produce vomiting and purging. The *oil* extracted from them is used externally in rheumatism.

Anethum Foeniculum.—See Foeniculum Vulgare.

Anethum Sowa or A. Graveolens.—See Peucedanum Graveolens.

Anethum Trifoliatum.—See Pimpinella Anisum.

56. ANISOCHILUS CARNOSUS.

(*N. O.*—LAMINACEÆ).

Sans.—Ajapada: Ulpalabheda ; Induparni. *Eng.*—Thick-leaved lavender. *Hind.*—Panjiri, Sitaki. *Gus.*—Ajamanupatree. *Mah.*—Kapurli. *Tel.*—Rosachettu. *Tam.* and *Mal.*—Karpooravalli. *Can.*—Doddapatri, Karavaeru. *Kon.*—Savirsambharu.

Habitat.—Northern Circars, Mysore and Malabar.

Parts Used.—The leaves and essential oil.

Constituents.—A volatile oil.

Action.—Stimulant, diaphoretic and expectorant.

Uses.—Fresh *juice of the leaves* mixed with sugar-candy is given to children in coughs; mixed with sugar and gingelly oil it forms a cooling liniment for the head. The leaves and stems in *infusion* are useful in coughs and colds. The plant yields a *volatile oil* which has stimulant, expectorant and diaphoretic properties; it is given in doses of 1 to 3 minims on loaf sugar.

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57. ANISOMELES MALABARICA or A. Ovata or A. Disticha or A. Frutiosa

(*N. O.*—LAMINACEÆ).

Sans.—Alamoola. *Eng.*—Malabar catmint. *Mah.*—Chodhara. *Tel.*—Mogbeeraku. *Tam.*—Paeyemaruti. *Can*—Karithumbi. *Mal.*—Karitumpa. *Bom.*—Gaozaban. *Duk.*—Maogbira; Kaspatta. *Kon.*—Kalothumbo.

Habitat.—Travancore, Malabar Coast, South India and Ceylon.

Parts Used.—The herb, leaves and essential oil.

Constituents.—This aromatic plant contains a volatile oil and a bitter alkaloid.

Action.—Stomachic, carminative, diaphoretic and astringent.

Preparations.—Infusion of leaves (1 in 10) dose:—½ to 1 ounce. Decoction of the whole plant (1 in 10) dose:—½ to 1 ounce. Essential oil. Juice of the leaves, dose:—½ to 1 drachm.

Uses.—*Infusion* is useful in affections of the stomach and bowels, in catarrh and intermittent fevers; the *juice of the leaves* is administered to children in colic, dyspepsia and fever caused by teething. *Vapour* of the hot infusion

inhaled induces copious diaphoresis (perspiration). The decoction of the plant is an excellent fomentation for rheumatic joints. The *essential oil* distilled from the leaves is used *externally* as an embrocation in rheumatic arthritis. *Internally* it is given in doses of 2 to 5 minims.

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58. **Anona Muricata** of the Natural Order. Anonaceae, is indigenous to West Indies but cultivated in Eastern India. The ripe fruit has pleasant slightly acid pulp which is employed in preparing refrigerant drink in fevers. When unripe, it is very astringent and is employed in intestinal atony and in scorbutic conditions. The bark is astringent and the root-bark is given in ptomaine-poisoning, especially, after putrid fish-eating. The leaf is used as an anthelmintic and externally as suppurant.

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59. ANONA RETICULATA.

(N. O. ANONACEÆ)

Bom. Mar. Guz. & *Can.*—Ram-phal. *Ben.*—Nona: *Hind.*—Louna. *Eng.*—Bull's heart or true custard apple Sweetsop. *Tam.*—Ram-sitaphalam. *Tel.*—Ram-seetapandu. *Fr.*—Petitcorossol. *Ger.*—Rahmapfel.

Habitat.—Indigenous to West Indies, but now naturalized in India and occuring in Bengal, Burma and South India.

Parts Used.—Bark, fruit, seeds and leaves.

Constituents.—The seeds and the bark contain much tannic acid.

Action & Uses.—The bark is said to be a powerful astringent and much used as a tonic by the Malays and Chinese. The unripe and dried *fruit* is used as an astringent in diarrhoea and as an antidysenteric and vermifuge;

the *kernel of the seeds* is highly poisonous. The *leaves are* anthelmintic and externally they are useful as suppurant.

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60. ANONA SQAMOSA.

(*N. O.*—ANONACEÆ.)

Sans.—Shubha; Suda; Ganda; Gutca. *Eng.*—Custard apple Sweetsop. *Hind.*—Sharifah. *Ben., Gus., Duk., Mah., and Can.*—Sitaphal. *Tel.*—Seetapandu. *Tam.*—Sitapalam. *Assam.*—Ata; Katal. *Mal.*—Sirpha. *Burm.*—Amesa. *Cing.*—Atta. *Fr.*—Attier. *Ger.*—Zuc-Kerapfel.

Habitat.—In gardens all over India.

Parts Used.—Leaves, bark, root, seeds and fruit.

Constituents.—The seeds yield an oil and resin; the seeds, leaves and immature fruit contain an acrid principle.

Preparations.—Poultice, Paste and Powder.

Action.—Bark is powerful, astringent and tonic. Leaves, seeds and unripe fruit are vermicide or insecticide. Leaves are anthelmintic. The root is a violent purgative. The ripe fruit is a maturant.

Uses.—The *ripe fruit* bruised and mixed with salt is applied to malignant tumours to hasten suppuration. The *leaves* made into a paste without adding water are applied to unhealthy ulcers; *Seeds* applied to os uteri cause abortion. *Leaves* are applied for extraction of guinea-worm. They are also used in fomentations. Fresh leaves crushed between finger and applied to nostrils cut short fits of hysteria and fainting. The seeds are detergent; their powder mixed with gram is a good hair-wash; the *pulp* of the ripe fruit is employed in preparing cooling drink in fevers. Unripe fruit is astringent and is given in diarrhœa, dysentery and atonic dyspepsia. The *astringent bark* is used as tonic.

61. ANTHEMIS NOBILIS.

(*N. O.*—Compositæ.)

Eng.—Chamomile; Camphor-plant (the odour of the flowers being like that of camphor). *Hind and Ben.*—Babun-kephul. *Pers.*—Babunah. *Arab.*—Babunj; Shajrat-ol-Kafur. *Mah.*—Babuna. *Tam.*—Shimeda-pu *Tel.*—Simachamauli pushpamu. *Can.*—Shime-shavantige.

Habitat.—It is a native of Europe and Persia, but cultivated in India chiefly in the Punjab. The dried flowers are available in all the bazaars.

Parts Used.—The dried flower-heads and oil.

Constituents.—A volatile oil, anthemene 1 p. c. anthemic acid, a bitter extractive principle, tannin, resin, malates and tannates. The oil consists of (1) angelic and tiglic esters of isobutyl, amyl and hexylalcohols; (2) an alcohol anthemol and anthemene a hydrocarbon.

Action—It has the power of lowering reflex excitability and therefore useful in nervous diseases of women. It generally acts as stomachic, tonic, carminative, emmenagogue, anti-periodic, vermifuge and insecticide. The *essential oil* has anti-spasmodic properties, in doses of 1 to 3 minims

Preparations—Infusion; Paste; Oil and Extract, solid and fluid

Uses.—*Chamomile* is useful in dyspepsia and general debility in doses of 10 to 30 grains. The *warm infusion* in large doses is sometimes used to promote the emetic action; it is useful in hysteria and suppression of menses. It is also given in flatulent colic, dyspepsia, chlorosis etc. The *cold infusion* is given in indigestion and summer diarrhœa in half to 1 ounce doses. *Externally* an infusion or *decoction or cataplasm* of the flowers is used to relieve

pain. Its odour is destructive to gnats and itch insects and hence the flowers are used as insecticide. The dose of solid extract is 2 to 10 grains and of fluid extract is 30 to 60 minims.

62. ANTHOCEPHALUS CADAMBA.

(*N. O.* RUBIACEÆ.)

Sans.—Kadamba; Nipa; Halipriya (dear to agriculturists); Sisupala (protecting children). *Guz., Bom., Ben. and Hind.*—Kadamba. *Mysore.*—Heltege; Arsenatega. *Can.*—Kadvala. *Tam.*—Vella Kadamba. *Tel.*—Rudrakshkamba. *Eng.*—Wild Cinchona. *Mah.*—Kalamb.

Habitat.—All over India.

Parts Used.—The fruit, leaves and bark.

Constituents.—The bark contains an astringent principle; this astringency is due to an acid similar to cincho-tannic acid and the drug contains a ready-formed oxidation-product of the nature of cinchona red.

Action.—The bark is tonic and febrifuge. The fruit is refrigerant.

Preparations.—Juice and decoction of the bark (1 in 10), dose.—1 to 2 ounces.

Uses.—The *juice of the fruit* is given to children with cumin and sugar in gastric irritability and the fruit is given in fever with great thirst. The fresh *juice of the bark* is applied to the heads of infants, when the fontanella sinks and a small quantity mixed with cumin and sugar is given internally. In inflammation of the eyes, the bark-juice with equal quantity of lime-juice, opium and alum is applied round the orbit. Decoction of the bark is given in fevers. *Decoction of the leaves* is used as a gargle in aphthæ or stomatitis.

63 APIUM GRAVIOLENS.

(N. O.—UMBELLIFERÆ.)

Sans.—Ajmoda. *Eng.*—Wild celery. *Hind. and Bom.*—Badi ajmud: Karap. *Ben.*—Chanu: Randhuni. *Punj.*—Bhutghata.

Habitat.—Base of the N. W. Himalaya and outlying hills in the Punjab, and in western India.

Parts Used.—Roots and seeds.

Constituents.—It is said to contain sulpher. It also contains apiol a poisonous principle, a volatile oil, albumen, mucilage and salts.

Preparations.—Powder; Decoction and distilled medicated water.

Action and Uses.—Celery is a known preventive of rheumatism and gout. It is described by Hakims as deobstruent and resolvent and used internally as pectoral and as tonic and carminative adjunct to purgatives also as diuretic, emmenagogue lithontriptic and alexipharmic. The officinal *root* is considered alterative and diuretic and given in anasarca and colic. The *seeds* are given as stimulant and cordial. As antispasmodic they are used in bronchitis, asthma and to some extent for liver and spleen diseases. It is used as a diet by cooking celery root into a variety of preparations, stew, soup etc. Celery coffee made from the root is supposed to give strength to the brain and nerve. The following home-remedies have been found beneficial— (1) Take of Apium graveolens (*Badi Ajmod*) 2, Cyperus Rotundus (*Mustaka*) 1½, Anise seeds 1½ and Indian Valerian or Valeriana Wallichi (*Tagara*) 1 part. Mix and reduce them to a powder. Dose.—½ to 1 drachm; or (2) Take of Apium graveolens 2, Anise seeds

1 and sugar 1 part. Mix and reduce the whole to a powder. Dose.—½ to 1 drachm. Used in flatulence and colicky pains. (3) Take of Wild Celery 1, Ptychotis Ajwan (omum seeds) 1 and Water 20 parts. Distil the whole. Dose—1 to 2 ounces. Given in flatulent colic and used as an adjunct to antispasmodic and carminative medicines.

Apium Petroselinum--See Petroselinum Sativum.

Aplotaxis Auriculata.--Saussurea Auriculata.

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64. AQUILARIA AGALLOCHA or A. Ovata.

Sans.—Agaru; Rajarah kalijya; Jishvarupa. *Eng.*—Aloe-wood; Eagle-wood. *Ben.* and *Hind.*—Agaru. *Mal.*—Kayagahru. *Pers.*—Belanjirj. *Tel. Tam.* and *Can.*—Krishna-agaru. *Arab.*—Ud-el-juj. *Burm.*—Akyan *Chin.*—Chin-heang.

Habitat.—Assam. East Himalaya, Bhutan and Kassia mountains.

Parts Used.—The wood.

Constituents.—A volatile oil.

Preparations.--Decoction (1 in 10) dose.—4 to 12 drachms. Powder and paste. Confection made with a number of drugs, dose:--20 to 60 grains.

Action and Uses.—Used as a perfume in the form of *Powder* and internally as stimulant, cholagogue and deobstruent. It is an ingredient in various nervine tonics, carminative and stimulant preparations. It is used in gout and rheumatism; also to check vomiting. As an anodyne *fumigation* it is used to relieve pain in surgical wounds and ulcers. A *paste* of *Agaru* and *Isvari* (Indian birthwort) with brandy is applied to the chest in bron-

chitis of children and to the head in headache. It is a chief ingredient in incense sticks. A *confection* containing many drugs and known as *Java-rusa-uda* is given in doses of 20 to 60 grains as a nervine tonic in seminal debility, giddiness and leucorrhœa.

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65. ARACHIS HYPOGEÆ.

(*N O.*—LEGUMINOSEÆ)

Sans.—Buchanaka. *Eng.*—Earthnut, groundnut, peanut. *Hind.*—Bhuising; Mungphali. *Ben.*—Chinee badam. *Duk.*—Velati-mung. *Mah.*—Bhuichana. *Tel.*—Værushanagalu. *Tam.*—Vaerkadalai; Manilakottai. *Can., and Mal.*—Nelakadale. *Kon. and Sind.*—Bhui-mug. *Bom.*—Bhuisheng. *Malay.*—Nela-Katala. *Burm.*—Mibe: Myepe. *Singbhum.*—Rata-Kaju.

Habitat.—South India, Bombay and some parts of Bengal.

Parts Used.—The nut and oil.

Constituents.—The seeds abound with starch and oil and a large proportion of albuminous matter. The oil contains glycerides of palmitin and olein, hypogaeic lignocerric, linolic and arachidic acids. The nut-meal and the kernel contain sugar, starch, nitrogenous matter, fatty matter, moisture, fibre and ash. The albuminous matter and ash are about four times as much as found in the kernel; so the non-decorticated nut contains 31·9 per cent of albuminous substance and 4·6 per cent of ash containing mineral salts, *viz.*, potash, magnesia and phosphoric acid.

Action.—Nutritious, aperient and emollient.

Preparations.—Salted and roasted nuts; nut-meal, butter and oil.

Uses.—The *ground nuts* are said to be very bilious. The seeds roasted with or without salt are eaten and also in the form of meal and butter. The *oil* of the ground-nut is, in Pharmacy, a good substitute for olive or almond oil, the latter of which it is said to adulterate. The *oil* is regarded as an excellent aperient and emollient and is used in catarrh of the bladder. The *ground-nut meal* as food is nutritious, being rich in all important constituents. The meal is used in confections, in the manufacture of almond macaroons, candies and small cakes. In the preparation of groundnut *butter*, the shelled peas are first roasted moderately (not scorched) so as to remove their thin brown coverings and the germs, after which they are ground to a pulp, which is then bottled and sealed with or without being salted. *Nut-butter* will mix with water and is used as a substitute for cream. From the peanut are produced other nut-foods in England and America which are known as Protose, Nuttose, Bromose, Metose, Nutmetose, etc.

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66. ARECA CATECHU.

(*N.O.*—Palmaceæ.)

Sans.—Kramuka, Pooga, Guvaka, Kuvara *Eng.*—Areca or betel-nut-palm. *Hind., Guz. and Mah.*—Supari. *Ben.*—Supari; gua. *Tel. & Mal.*—Kazhangu, Pakavakka. *Tam.*—Kiramukam, Paku-kotai. *Can.*—Adike. *Assam.*—Tambul.

Habitat.—Cultivated throughout tropical India. It flourishes in dry plateau of Mysore, Canara and Malabar.

Parts Used.—The seed or kernel and the extract, the root and the tender leaves. The watery extract yields betel-nut catechu.

Constituents.—The kernels contain catechu, tannic and gallic acids, oily matter (fat 14 p.c.), gum and three alkaloids, *viz*., arecoline, arecaine and guvacine. Arecoline the most important alkaloid and an anthelmintic principle is a liquid which forms a white crystalline hydro-bromide which acts on the peristalsis of the bowels and on entozoa. It is soluble in water, alcohol and ether.

Action.—The fresh nut is somewhat intoxicating and produces giddiness in some persons. The dried nut is stimulant, astringent and taenifuge. It increases the flow of saliva; lessens perspiration, sweetens the breath, strengthens the gum and produces mild exhilaration.

Preparations.—Powder, dose.—10 to 30 grains; fluid extract, dose:—10 to 30 minims; tincture, dose.—1 to 2 drachms; arecanut-charcoal-tooth-powder.

Uses.—The *kernel* of the fruit is one of the constituents of the universal masticatory the "betel" or the *pan* of the East. The young *nut* is useful in bowel complaints. The powder of the dried nuts in 10 to 15 grain-doses with equal parts of sugar will check diarrhœa due to debility; it is also useful in urinary disorders. One-fourth tola of the powder rubbed into a paste with two tolas of fresh lemon juice makes an excellent vermifuge. Sometimes it is more usefully given grated than in a fine powder. About a teaspoonful is administered after the patient has fasted 12–14 hours, either made up into a bolus with ghee or floating on milk, the latter being the favourite method. It generally acts an hour after administration and is efficacious in round as well as tape-worms; 4 to 6 drachms of the powder stirred up with 2 or 3 ounces of milk is generally administered for the expulsion of the tape-worm. The arecoline hydrobromide is responsible for this action.

The *tincture* forms an astringent gargle when freely diluted with water (1 drachm of the tincture to 4 ounces of water) useful for bleeding gums and may be used as an injection for stopping watery discharges from the vagina; also useful in checking the pyrosis of pregnancy. The *nut* burnt to charcoal and powdered with or without an equal part of catechu and a quarter part of cinnamon forms an excellent tooth-powder. The *juice of tender leaves* mixed with oil is applied as an embrocation in cases of lumbago and a *decoction of the root* is a reputed cure for sore lips.

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67. ARGEMONE MEXICANA.

(*N.O.*—PAPAVERACEÆ.)

Sans.—Brahmadandi; Srigalakanta. *Eng.*—Yellow thistle; prickly or Maxican poppy. *Hind.*—Pila-dhatura, Bherband, Kutaila. *Ben.*—Sialkanta. *Guz.*—Darudi. *Duk.*—Feringee-datura. *Mah.*—Kanta-dhotra. *Tel.*—Brahmadandi. *Tam.*—Kudiyoetti. *Can.*—Arasina-ummatta. *Mal.*—Ponnummattum. *Uriya.*—Kanta-kusham.

Habitat.—Common everywhere in India (originally brought from Mexico) and appearing in the cold season.

Parts Used:—The milky juice of the fresh plant and a fixed oil of the fresh seeds and the fresh root.

Constituents.—The leaves and capsules contain an alkaloid resembling morphia, the seeds contain an oil 36 p. c., carbo-hydrates and albumen 49 per cent, moisture 9 per cent, and ash 6 per cent. The ash contains alkaline phosphates and sulphates. The seeds contain very little of the alkaloid.

Action.—The juice is alterative, anodyne and hypnotic. The seeds are laxative, nauseant, emetic and

narcotico-acrid : the oil from the seeds is aperient and sedative, combining the action of castor-oil and cannabis indica ; the fresh root has an anodyne effect.

Uses.—The *whole plant* abounds in a yellow *juice* which is diuretic in effect and therefore used in dropsy, jaundice and as alterative in syphilis, gonorrhœa, leprosy and other cutaneous affections ; also administered in conjunction with ghee in gonorrhœa etc., along with the juice of Aristolochia bracteata ; one tola of the juice taken early morning on empty stomach is said to cure leprosy in 40 days. *Externally* it relieves blisters and heals excoriations and indolent ulcers. Care should be taken that it may not come in contact with eyes. A thirty-minim dose of the *oil* acts as cathartic ; it is best given in sugar ; but it generally causes vomiting also ; the oil is applied externally to skin diseases, also in headache ; it is a valuable application in herpetic eruptions; the oil is a powerful alterative in syphilis and leprosy. The *seeds and oil* have a beneficent effect in asthma which they control; the largest dose of the seeds is 2½ drachms always used in *emulsion* which can be sweetened if necessary; of the oil thirty minims is the biggest dose. The smoke of the seeds relieves toothache; useful also in caries of the teeth. The *fresh root* bruised and applied to the part stung by scorpions is said to give relief. The *powdered root* in drachm doses is found useful in tapeworm.

68. ARGYREIA SPECIOSA.

(*N. O.*—CONVOLVULACEÆ.)

Sans—Vriddha-daraka; Samudrapalaka. *Eng.*—Elephant creeper. *Ben.*—Bijtarka. *Guz., Mah., Bom., Hind.*—Samudra-shokha. *Duk.*—Samanderka patta. *Tel. and Can.*—Chandra-pada.—*Tam.*—Samudrapachchai.

Habitat.—Throughout India.

Parts Used.—The leaves and root.

Constituents.—Tannin, and amber-colored acid-resin soluble in ether, benzole and partly soluble in alkalies.

Preparations—Decoction of the root (1 in 20), dose:—½ to 1 ounce; Powder.

Action and Uses.—The *root* is alterative & tonic; the *powdered root* is given in milk in synovitis and syphilis. The under surface of the *leaf* is irritant and is used to hasten maturation and suppuration. It sometimes acts as a vesicant. The upper surface is cooling and supposed to possess healing qualities. As an alterative and nervine tonic, the *powdered root* is soaked seven times during seven days in the juice of the tubers of Asparagus Racemosus (*Satamuli*) and dried. The resulting powder is given in doses of a quarter to half a tola with clarified butter for about a month. It is said to improve the intellect, strengthen the body and prevent the effects of age. The root of this plant forms an ingredient of a compound powder known as *Ajmodadi Churna* which is said to be useful in rheumatic affections and hemiplegia. For its preparation see Ptychotis Ajowan.

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69. ARISTOLOCHIA BRACTEATA.

(*N.O.*—ARISTOLOCHIACEÆ.)

Sans:—Pattra-banga; Dhumra-pattra; Gridhrani. *Eng:*—Worm-killer; Birthwort. *Bom. Duk. Guz. Hind.*—Gudhatee; kiramara. *Can*:—Sanajali-hullu. *Mal:*—Atu-tinlap. *Mah.*—Gandhani ; Gaval. *Tam*:—Adu-tinna-palai. *Tel*:—Gudide Gaddithaigadapara.

Habitat.—Deccan, Travancore, Coromandal and Ceylon.

Parts Used.—The herb, seeds and leaves.

Constituents.—A nauseous volatile substance, an alkaloid and salts, especially potassium chloride.

Preparations.—Infusion (1 in 10), dose :— ½ to 1 ounce; powder of the seeds, dose.—30 to 90 grains.

Action and Uses.—Purgative, emmenagogue, alterative, antiperiodic and anthelmintic. Given with castor oil in colic and tormina, amenorrhœa, dysmenorrhœa, tedious labour, intermittent fever and worms. Also given in syphilis, gonorrhœa and skin diseases.

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70. ARISTOLOCHIA INDICA.

N. O —ARISTOLOCHIACEÆ

Sans.—Ahiganda, Sunanda, Arkamula; Rudrajata, Ishwari. *Eng.*—Indian birthwort. *Hind. Ben. and Duk.*—Isharmul Ruhimula. *Mah.*—Sapsanda. *Tel. and Can.*—Eesvurberu. *Tam.*—Perumarindu. *Guz.*—Sapsan. *Mal.*—Eeshvaramulla. *Kon.*—Sapsikaddula.

Habitat.—This twine is found all over India.

Parts Used.—The root and rhizome and leaves.

Const ituens.—It contains an aromatic oil, a coloring principle and an alkaloid.

Action.—The root is tonic, stimulant, emmenagogue, alexiteric and anti-arthritic. The leaves are stomachic, tonic and anti-periodic.

Preparations.—Decoction (1 in 10), dose.—½ to 1 ounce. Tincture (1 in 8), dose.—½ to 1 dr. Expressed juice of the leaves, dose.—½ to 2 drs.

Uses.—The root is a valuable antidote to snake-bite and to bites of poisonous insects as scorpion etc; it is used both externally and internally; it makes the part bitten insensible to the ill-effects of the poison. Rubbed with honey it is given in white leprosy; it is also considered useful in

dropsy. Macerated with black-pepper corns it is given in cases of cholera and diarrhœa with much benefit. The *juice of the leaves* as also of the bark is chiefly used in the bowel-complaints of children, cholera and diarrhœa and in intermittent fevers.

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71. ARTEMESIA ABSINTHIUM or A. Vulgaris or A. Indica or A. Paniculata.

(*N. O.*—Compositæ or Asteraceæ.)

Sans.—Indhana. *Eng*—Worm-wood; Mugwort. *Hind, and Duk.*—Vilayathi Afsantin. *Guz and Ben.*—Mastaru. *Mah.*—Serpana. *Tam.*—Mâchipattri. *Tel.*—Tartiha; Moshipatri. *Mal.*—Nilampala; Tirunitri-Pachcha. *Can*—Uruvalu; Urigattige.

Habitat.—Cashmere; Nepal and mountainous districts of India.

Parts Used.—The dried herb, leaves and flowering tops.

Constituents.—Volatile oil and a bitter extractive matter '*absinthin*,' tannin, resin, succinic acid, malates and nitrates of potassium etc., and ash 7 p.c. The volatile oil having a camphoraceous odour is obtained by distillation. It contains *thujone* or absinthol, turpenes 2 p.c., and a deep blue oil. *Absinthin* is an intensely bitter, white or yellowish-brown glucoside very soluble in alcohol and chloroform, but slightly so in ether and water, Absinthin is obtained by precipitating the infusion with tannin.

Preparations.—Extract, dose.—1 to 4 grains. Oil, dose.—½ to 3 minims. Tincture (1 in 8), dose.—½ to 1 dr. Infusion (1 in 10), dose :—½ to 1 ounce. Aromatic wine,

a French liquor named Vinum Aromaticum Absinthium, containing marjorum, angelica, anise etc.

Action.—The *oil* is narcotic poison if long used. The herb possesses febrifuge, stomachic, deobstruent, diaphoretic, anthelmintic, antiseptic and slightly narcotic properties. It is a good aromatic bitter tonic. It has a remarkably tonic influence upon the brain, especially upon its higher faculties concerned with psychical function.

Uses.—The herb steeped in hot vinegar is bound round a sprain or bruise; and also it or the expressed juice of the herb is applied to the head to prevent convulsions. The former is also used as fomentation to the head in cephalalgia, to the joints in gout or rheumatism. Absinthium is a bitter stomachic tonic. It increases appetite and promotes digestion; it is given in dyspepsia. It is also given in hysteria, spasmodic affections as epilepsy, in nervous irritability and nervous depression; also in mental exhaustion. As an enema its *infusion* is used as an anthelmintic. A strong decoction of the herb is given as a vermifuge, and a weak one to children in measles. *Externally* it is used as fomentation in skin diseases, and foul ulcers. The dose of the herb is 10 to 60 grains.

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72. **Artocarpus Blumei**—A species belonging to genus of Artocarpaceæ, growing in Java and Malabar with edible fruit. The fruit yields an oil which is used in cookery and in diarrhœa. An ointment of the buds and leaves is applied to buboes and hæmorrhoids.

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73. ARTOCARPUS INTEGRIFOLIA.

(*N. O.*—ARTOCARPACEÆ).

Sans.—Panasa, Skandaphala. *Eng.*—Indian Jack tree *Hind.*—Katahara. *Duk.*, *Kon.* and *Mah.*—Phanas. *Ben.*—

Kanthel. *Tel.*—Panasa. *Tam.*—Palachu. *Can.*—Halasu. *Mal.*—Pilav; Kandakiphala. *Guz.*—Manphanasa. *Fr.*—Jaquier. *Ger.*—Indischer Brodbaum.

Habitat.—Cultivated all over India.

Parts used.—The fruit, seeds, leaves, root and the milk-juice of the plant.

Constituents.—The dry stuff jack wood contains morin and a crystalline constituent *Cyanomaclurin.* The seed contain a large percentage of starch.

Action.—The ripe fruit is demulcent, nutritive and laxative. Tho unripe one is astringent.

Uses.—The *fruit* is most popular in India and is very delicious to taste. If eaten in large quantities it produces diarrhœa. It is best eaten on empty stomach especially in mornings. The unripe fruit is generally used in the preparation of pickles; when cooked it makes a nice curry. The *seed* when roasted is good food and resembles chestnuts. The *milk-juice* of the plant mixed with vinegar and applied to glandular swellings and abscesses promotes absorption or suppuration. The *tender leaves* and the *root* are useful in skin diseases and decoction of the *root* and concretions forming from the exudations of the root are given in diarrhœa. The *leaves* are considered a antidote to snake poison.

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74. **Artocarpus Lakoocha** is a species of the same genus as the above. It is found in Bengal where its acid and astringent spadix is eaten in curry.

75. **Artocarpus Parvifolia.**—Of the same genus; it is a species found in Bengal and the East Indies with edible fruit.

Arum Campanulatus.—See Amorphophallus Campanulatus.

76. ARUM COLOCASIA.

(*N. O.*—ARACEÆ)

Sans.—Katchu. *Eng.*—Cocco. *Hind.*—Kachu: Chamkurakagadda. *Ben.*—Guri, Kachu. *Mah*—Alu. *Tel.*—Sheemagadda. *Tam.*—Sheemai-kilangu. *Can.*—Kasave: Avigadde. *Mal.*—Chaemp. *Kon.*—Vęnti: Kásálu.

Habitat.—Wild over the greater part of tropical India and also cultivated throughout India on account of its corms.

Parts used.—The petioles or leaf-stalks and the corms.

Constituents.—The tuber, leaves and stems contain needle-shaped crystals insoluble in acetic acid but soluble in dilute nitric or hydrochloric acid. The physiological symptoms caused by *Arums* are due to these needle-shaped crystals of oxalate of lime.

Action—Externally the juice of the petioles is styptic, stimulant and rubefacient. Internally the corm is laxative.

Uses.—The pressed *juice of petioles* is applied in arterial hæmorrhages, wounds etc., which are said to heal by first intention after its application. It is sometimes dropped in ear-ache and otorrhœa. It forms a good application to the strings of wasps and other insects. The juice of the *leaf-stalks* of the black species is used with salt as an absorbant in cases of inflamed glands, buboes etc. The juice of the *corm* is used in cases of alopeciæ. *Internally* as laxative it is useful in piles and congestion of the portal system.

Arum Indicum.—See Alocasia Indica.

Arundo Bambos.—See Bambusa Arundinaceæ.

77. ASCLEPIAS ASTHMATICA.

(*N. O.*—ASCLEPIACEÆ.)

Sans.—Moolinee, Gandhana. *Eng.*—Vomiting swallow-wort. *Hind.*—Jangli-pikwan. *Ben.*—Antamool. *Tel.*—Kurinja; Kukka-pala; Verri-pala. *Tam.*—Nalpalai *Can.*—Kirumanji; Adumuttoda. *Mal.*—Vallipal. *Mah.*—Pittamari; Pittakari; Kharaki.

Habitat.—Bengal to Burma, South India and Ceylon.

Parts Used.—The dried leaves and the root.

Constituents.—The leaves and root contain an alkaloid "*tylophorine*" and an emetic principle. Tylophorine is sparingly soluble in water but very soluble in ether and alcohol.

Action.—Diaphoretic, expectorant, emetic, stimulant and alterative.

Preparations.—Powder and liniment.

Uses.—The root and the leaves are regarded as a substitute for ipecac powder of B.P., i.e., the powder of the dried leaves is emetic in half-drachm doses; in small doses i. e., 3 to 5 grains it is expectorant and diaphoretic. The roots are superior to leaves in action. They have an additional laxative property; a good remedy in doses of 15 grains in cases of dysentery generally administered in *powder* and in combination with a little gum-acacia and a grain of opium. A *liniment* prepared with the root is applied to the head in cephalalgia and neuralgia. In overloaded state of the stomach and in other cases requiring the use of emetics its powder acts efficiently. It has been found useful in bronchitis and other chest affections in which Ipecac is generally employed.

78. ASCLEPIAS CURASSAVICA.

(*N. O.*—Asclepiadeæ.)

Bom:—Kuraki : Kakatundi. In Jamaica it is called "blood-flower" owing to its efficacy in dysentery.

Habitat.—Bengal and various parts of India; it is a weed from the West Indies introduced throughout the Tropics.

Parts Used.—The leaves, root and flowers.

Constituents.—It contains an active principle named *asclepiadin* a yellowish amorphous 'glucocide which is, when fresh soluble in water and of the action of emetin.

Action.—The *root* acts first as purgative and subsequently astringent. It and the expressed juice are also emetic. The root is said to act directly upon the organic muscular system and specially upon the heart and blood vessels causing dyspnœa, vomiting and diarrhœa.

Uses.—The root is a remedy in piles and gonorrhœa The plant is also used in dysentery.

Asclepia Gigentia.—See Calotropis Gigentia.

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79. ASPARAGUS ADSCENDENS.

(*N. O.*—Liliaceæ).

Bom, Hind, Mah. & Guz.—Sufed Musli ; Sataver. *U. P.*—Khairuwa. *Tam.*—Tannirvittang. *Tel.*—Tsallo-gadda. *Mal.*—Shede-veli. *Cing.*—Hirtha-wariya.

Habitat.—West Himalaya, Punjab, from Murree to Kumaon, Guzerat and Central India.

Parts Used—The tuberous root or rhizome decorticated.

Constituents.—Albuminous matter, mucilage and cellulose. Powdered root is found to contain watery extract, cellulose, moisture and ash, which is 3·6 p.c.

Action.—Nutritive, tonic and demulcent. The rhizome is bitterish in taste.

Preparations:—Confection and Powder.

Uses.—Boiled in milk and sugar, it is used in spermatorrhœa, gleet and chronic leucorrhœa; also in diarrhoea, dysentery and general debility. It is used as a substitute for *Salep*. A *compound powder* containing many ingredients is given as a nutritive tonic in doses of from 5 to 30 grains in milk in cases of seminal weakness and impotence.

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80. ASPARAGUS OFFICINALIS.

(*N.O.*—LILIACEÆ).

Arab.—Isfarez; Halyan. *Eng.*—Common asparagus. *Hind.*—Nakdown; Margiyeh *Indian Bazar.*—Halyun *Pers.*—Merchubeh.

Habitat.—Northern India.

Parts Used.—The plant, root and ripe fruits (seeds).

Constituents.—The root contains *asparagin*, a greenish yellow resin, sugar, gum, albumen, chlorides, acetate and phosphate of potash, malates, etc. The berries contain grape-sugar and spargancin, a colouring matter. The seeds contain a fixed oil, aromatic resin, sugar and a bitter principle spargin.

Action.—Asparagin stimulates the kidneys and imparts a strong smell to urine. Generally the drug is a mild aperient, diuretic and sedative. The green resin contained therein is said to exercise a sedative effect on the heart, calming palpitation of that organ.

Preparations.—Infusion (1 in 10), dose :—1 to 2 ounces. Powder; dose :—1 to 2 grains.

Used.—It is given in flatulency, calculous affections, ac dropsy, rheumatism and chronic gout. In doses of

1 to 2 grains, combined with potash bromide it is given in cardiac dropsy and chronic gout. The water in which asparagus has been boiled, though disagreeable, is good for rheumatism.

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81. ASPARAGUS RACEMOSUS or A. Sarmentosus or A. Gonoclados.

(*N. O.*—LILIACEÆ.)

Sans.—Shatavari, Shatamoolee. (*Shata*—hundred; *mooli*-roots, alluding to its numerous fusiform roots). *Ben. and Can.*—Satmuli. *Hind, Guz, Mah, Tel. and Mal.*—Satávare. *Tam.*—Paniyanaku *Cash.*—Sejhana. *Tel.*—Phillitaga.

Habitat.—This climber is found all over India.

Parts Used.—The roots and leaves.

Constituents.—Large amount of saccharine matter and mucilage.

Action—Nutritive, tonic, demulcent, galactagogue, aphrodisiac and antispasmodic.

Preparations.—Confection. Decoction (1 in 20), dose.—1 to 2 ounces. Medicated oil and *Ghritas*. *Shatavari ghrita* is prepared thus.—Take of clarified butter 4 seers, juice of Asparagus Racemosus 4 seers, milk 40 seers; boil them together and prepare a *ghrita*. This is given with the addition of sugar, honey and long-pepper as an aphrodisiac tonic. *Phalaghrita.*—This is prepared with 4 seers of clarified butter, and 16 seers each of the juice of Asparagus Racemosus and cow's milk with the addition of a number of other medicines in small quantities in the form of a paste. Its use is said to increase the secretion of semen, to cure barrenness in women and to remove disorders of the female genitals. Dose.—1 drachm twice a day. A

popular cooling and emollient medicated oil containing asparagus and called *Narayana* taila is used externally in rheumatism, diseases of the joints, stiff-neck, hemiplegia and other diseases of the nervous system; *Vishnu Taila*, an oil much used in nervous diseases and prepared with sesamum oil, cow's or goat's milk and the juice of Asparagus Racemosus with the addition of a number of substances in small quantities in the form of a paste, and *Prameha Mihira Taila* which is prepared with the juice of Asparagus racemosus, sesamum oil, decoction of lac, whey and milk with the addition of a number of substances in the form of a paste are very useful applications. They are rubbed on the body and more particularly on the pubic region in chronic gonorrhœa, stricture of the urethra and other diseases of the urinary organs.

Uses.—As this *root* is said to have also antidiarrhœtic properities it is employed in diarrhœa as well as in cases of chronic colic and dysentery. The root is boiled in milk and the milk is administered to relieve bilious dyspepsia and diarrhœa and to promote appetite. The *tubers* are candied and taken as a sweetmeat. The *fresh root-juice* is given with honey as a demulcent; the *bark* is poisonous. The boiled *leaves* smeared with ghee are applied to boils, small-pox etc, in order to prevent their confluence. The juice of this drug, taken with milk is useful in gonorrhoea.

Asteracantha Longifolia :—See Hygrophila Spinosa.

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82. ASTRAGALAS VIRUS.

(*N.O.*—LEGUMINOSAE).

Eng.—Gum Tragacanth, *Hind.*—Angira, *Ben.*—Katila,

Habitat.—Himalayan regions.

Parts Used.—Gum from the bark.

Action.—Demulcent and emollient.

Preparations.—Mucilage and Powder. This gum which exudes during the hot season through the bark of the tree in slender threads gradually hardens and forms tears or worm-like pieces.

Uses.—This gum which is found in the bazaars forms the basis of some medicinal lozenges and styptic powder. It is very useful in cases of the irritation of the mucous membranes of the pulmonary and genito-urinary organs. It is chiefly used as a vehicle for more active medicines.

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83. ATALANTIA MONOPHYLLA.

(*N. O.*—AURANTIACEÆ.)

Sans.—Atavi-jambira. *Eng.*—Wild lime. *Mah.*—Makad-limbu. *Duk.*—Malang-nar. *Tel.*—Adavi-nimma. *Tam.*—Kat-elumichhai. *Can.*—Kadu-limbe. *Mal.*—Malenarakam. *Kon.*—Chor-nimbu; Ida-nimbu. *Guz.*—Dodi-nimbu. *Uriya.*—Nargumi.

Habitat.—East Bengal, South India & Ceylon.

Parts Used.—The oil, root, berries and leaves.

Preparations.—Decoction, oil and liniment.

Action & Uses.—The *berries* are made into a nice pickle which forms a useful curry-diet in fevers and ailments attended with loss of taste and appetite. The *leaf-juice* is an ingredient in a *compound liniment* used in hemiplegia. The *berries* yield a warm *oil* which is considered to be a valuable application in chronic rheumatism and also in paralytic limbs, as a stimulant. The ***root*** is antispasmodic and stimulant. The *decoction of the leaves* is applied in itch and other skin complaints.

84. AVENA SATIVA or A. Orientalis.

Eng.—Oats.

Habitat.—Britain and America. Available in Indian Bazaars, as also in many other countries.

Parts Used.—The seed or the grain and its meal (oatmeal).

Constituents.—Fat, starch, sugar, albumin soluble and insoluble, cellulose, mineral matter and moisture. The outer portion of the grain contains phosphates. The seed contains a principle called "*avenin*"

Preparations.—In America a tincture is made from it. Generally it is used as food in various forms :—meal, malt, porridge, Blanc-mange etc.

Action.—A most nutritious cereal containing a fair proportion of all the food-elements. But it should not be used as the *sole* article of diet for a long time even with the addition of milk, on account of its tendency to produce skin-eruptions due to the irritating qualities of "avenin" one of its ingredients. As tincture it is a nerve stimulant.

Uses.—It is most useful as a nutrient and is described as a perfect food. British grown oats are best. Oatmeal *porridge* does not agree with every one. In cases where the bodily vigour is low and the body ill-nourished, *creamed* Oatmeal, or Oatmeal *Blanc-mange* is very valuable. In the form of *tincture* it is recommended for all liable to much nervous strain. The dose is from 10 to 20 drops in a little hot water taken twice a day.

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85. AVERRHŒA ACIDA.

(*N. O.*—EUPHORBEACEÆ.)

Ben.—Nubarse ; Hurriphal. *Eng.*—Country goose-berry. *Mah. & Guz.*—Kanta-avala. *Hind.*—Chelmeri, Haraphalvadi.

Mal.—Chirmi. *Port.*—Chirambola. *Sind.*—Kakadana. *Tam.*—Arunelli. *Tel.*—Racha Usherihe. *Cing.*—Ratanalli.

Habitat.—India.

Parts Used.—Fruit, seeds and leaves.

Preparations.—Decoction of leaves (1 in 10), dose:—½ to 1 ounce.

Action & Uses.—The *decoction of the leaves* is a good diaphoretic. The leaves are mucilaginous and demulcent and given in gonorrhœa. The ripe *fruits* are used as adjuncts to cough mixtures. They are also pickled and preserved as *Amla*. *Seeds* are cathartic.

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86. AVERRHŒA BILIMBA.

(*N. O.*—OXALIDACEÆ.)

Hind.—Belambu, Tamarang. *Ben.*—Bilimbi. *Guz.*—Blimbu; Kaala-zounsi. *Mah.*—Bilamba. *Tam.*—Pilimbi Pullicha-kai; Kachittamarthakai *Can.*—Bimblee *Mal.*—Vilimbi. *Kon.*—Binbula. *Tel.*—Pulusukayulu; Bilibilikayulu. *Burm.*—Bilim.

Habitat.—Cultivated in gardens in India.

Parts Used.—The fruit.

Action.—The fruits are astringent, stomachic and refrigerent.

Preparation.—Syrup made from fruit juice.

Uses.—They are acid in taste and are generally employed in cookery along with other vegetables and grains to render them more palatable, digestible and assimilable. They are also useful in piles and scurvy; and also used in pickles. The juice of the fruit made into a *syrup* forms a cooling drink in fevers. The fruit is rubbed on clothes to remove any stains. The

syrup is prepared thus:—Take of the juice of the ripe fruit, ten ounces (by straining through cloth), refined sugar thirty ounces, water ten ounces. Mix and heat all the ingredients on a slow fire till the sugar is dissolved and the liquid assumes the consistence of a thick syrup.

87. AVERRHŒA CARAMBOLA.

(*N. O.*—OXALIDACEÆ.)

Eng.—Chinese gooseberry. *Sans. and Hind.*—Karmaranga. *Bom.*—Karamara *Ben.*—Kamarak. *Duk.*—Karmal, Meeta-kamarunga. *Guz.* & *Mah.*—Kamarakha. *Tel.*—Karomonga, Tamaratamu. *Tam.*—Tamarattai. *Can.*—Darchuli. *Mal.*—Tamaratta. *Kon.*—Karmbala. *Assam.*—Kardai.

Habitat.—Cultivated in India; introduced from the new-world by the Portuguese.

Parts Used.—The leaves, root and fruit.

Constituents.—The fruits contain a watery pulp which contains much acid potassium oxalate.

Action.—Laxative, refrigerent and anti-scorbutic.

Preparations.—Syrup made from the fruit juice.

Uses.—Two varietiesare known:—sweet & sour. The five angled *fruit* is eaten raw as well as used in curries and pickles. It is cooked with other vegetables and grains to make them more palatable and easy of digestion. The *ripe fruit* is antiscorbutic and highly cooling. The fruit-juice made into a *syrup* will form an excellent cooling drink in relieving thirst and febrile excitement; the fruit-juice employed in washing clothes renders them clean removing any spots or stains found thereon. The *ripe fruit* which is generally sour and contains oxalic acid is a good remedy for bleeding piles, particularly the internal piles.

Azadirachta Indica—See Melia Azadirachta.

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84. AZIMA TETRACANTHA.

(*N. O.*--SALVADORACEÆ).

Ben--Trikanta-juti. *Hind.*--Kanta-gur-kamai. *Mah.*--Sukkapat. *Tam.*--Sungam-chedi; Nallochangam. *Tel.*--Tella-upi.

Habitat.—Deccan, Ceylon, and Coromandal coast.

Parts Used.—The leaves, root and the juice obtained from the root-bark.

Preparations.—Decoction (1 in 10), dose —1 to 2 ounces. Compound decoction made with the addition of some useful drugs, dose.—2 to 3 ounces, twice a day in as much water.

Action & Uses.—A powerful diuretic given in rheumatism, dropsy, dyspepsia and chronic diarrhœa and as stimulant tonic after confinement.

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85. BALANITIS ROXBURGHII *or* B. Aegyptica or B. Indica.

(*N. O.*—SIMARUBEÆ).

Sans.—Gouritvac; Ingudi-vraksha. *Hind, Ben and Duk.*—Hingan; hingol. *Guz.*—Hinger. Egorca. *Tam*—Nanjunda. *Mal.*—Manchuta. *Tel.*—Garachetti., Ringri.

Habitat.—A scaggy shurb or a small tree ending in strong, sharp, ascending spines met with in the dry parts of India from Cawnpore to Sikkim, Behar, Guzrat and Deccan.

Parts Used.—Seeds, bark, leaves and fruit.

Constituents.—The bark yields a principle called *Saponin*. The pulp of the fruit contains organic acid, saponin, mucilage and sugar.

Action & Uses.—The *seeds* are given in coughs; they are also useful in colic. The *bark, unripe fruit and leaves* are pungent, bitter, purgative and anthelmintic and used in worms in children. The shell is filled with gunpowder and is used for fire-works. The oil expressed from the seeds is an application to burns and excoriations and also to freckles.

Baliospermum Axillare or Montanum.—See Jatropha Montana.

Balsamaria Inophyllum.—See Calophyllum Apetalum.

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86. BALSAMODENDRON MUKUL, or B. Agallocha.

(*N. O.*—BURSERACEÆ.)

Sans.—Guggul; Kou-shikaha. *Can.*—Guggula *Eng.*—Salaitree, Gum-gugul; Indian Bdellium. *Hind Duk., Tel. and Mah.*—Gugul *Ben.*—Guggul; Mukul. *Tam.*—Kukkulu. *Tel.*—Maishakshi; Gukkulu *Guz.*—Gugara. *Arab.*—Mogla; Aphalatana. *Pers.*—Baijahundana. *Cing.*—Rata-dummula.

Habitat.—Sind, Rajputana, Eastern Bengal, Berars Khandesh and Mysore.

Parts Used.—The gum.

Constituents.—Volatile oil, gum-resin and bitter principle.

Action.—Demulcent, aperient, alterative, carminative, antispasmodic and emmenagogue.

Preparations.—Paste or Ointment, Confection and Plaster.

Uses.—The *guggul* gum is a gum-resin and sometimes used in place of myrrh being much cheaper. It is largely used as incense in religious ceremonies. Medicinally fresh or recently exuded gum is used. It is used in rheumatism,

nervous diseases, scrofulous affections, urinary disorders and skin diseases. It is highly reputed in the treatment of rheumatism given internally and applied locally. When fresh it is moist, viscid, fragrant and of a golden colour. It burns in the fire, melts in the sun and forms a milky emulsion with hot water. Mixed with lime juice or cocoanut oil it is applied as a plaster to ulcers and bad wounds. The gum obtained from another species—B. Pubescens found in Sind, Karachi and Baluchistan is used as ointment in bad ulcers such as Delhi sores, combined with sulphur, catechu and borax. As plaster it is applied in hiccough on the pit of the stomach, where it acts instantly. A preparation called *Yogaraja guggula* is a favourite one in rheumatism and it is composed of several ingredients. Another preparation similar in composition is *Trayodasang guggula* which is made with 13 aromatic adjuncts and is recommended for use in rheumatism (lumbago) affecting the loins and the sacrum. In rheumatism affecting the joints and bones a preparation called *Adityapaka guggula* is used. Other preparations are *Vâtâri rasa, Kaisara guggula, Sadanga guggula, Amrita guggula and Kanchanara guggula. Triphala guggula* is a simple household remedy most useful in gonorrhœa, dropsy fistula, foul ulcers, syphilis &c. It is prepared by taking of *guggula* 5, *triphala* 3, *pipali* 1 and *madha* (honey) sufficient to make a pill mass after mixing all together. Dose :—5 grs.

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87. BALSAMODENDRON MYRRHA.

(*N. O.*—BURSERACEÆ.)

Sans.—Vola ; Rasagandha ; Saindhava ; Samudraguggul *Eng.*—Myrrh. *Hind. and Pers.*—Bol. *Mah. and Ben.*—Hirabol. *Bom.*—Bhensa Bol. *Ben. Duk and Guz.*—Bol. *Tam.*—Vellaippam. *Tel.*—Balintrapolum.

Habitat.—Collected in Arabia and Abssyinia and sold in Indian Bazaars.

Parts Used.—The gum from the bark of the tree.

Constituents.—A volatile oil called myrrhol, an oxygenated ethereal volatile oil 2 p.c., resin, myrrhin 25 to 40 p.c., which by fusion becomes converted into myrrhic acid, gum 40 to 60 p.c., bitter principle—a glucoside, salts as Calcium phosphate and carbonate etc.

Action.—Stimulant, expectorant and emmenagogue; externally it is astringent. Myrrh is in a soft oily state which soon hardens by exposure to air. It is aromatic, of balsamic odour and bitter in taste. Dose :—5 to 15 grains.

Uses.—Myrrh mixed with equal parts of honey and rectified spirit and dissolved in rose water or infusion of rose petals (50 parts) is good for mouth-wash and also for internal administration, in stomatitis. With borax it makes an application for parasitic stomatitis or thrush. It has been used from time immemorial as an incense. Medicinally it is useful in dyspepsia and mixed with molasses or preferably with iron and vegetable bitters it is given in amenorrhœa, chlorosis and other atonic uterine affections. It is also useful as an expectorant in chest affections, especially in chronic bronchitis and asthma. *Externally* it is used as an astringent, stimulating application in ulcerated conditions and a gargle for spongy gums and in ulcerated sorethroat. Dissolved in human or ass's milk it is dropped into the eye to cure purulent ophthalmia. It is useful as a dentifrice in caries of the teeth, either alone or mixed with other drugs. It is said to prevent the hair from falling off. In diphtheria the tincture of myrrh combined with glycerine is given *internally* every one or

two hours with benefit. Three grains each of powdered myrrh and rhubarb with five grains of *Kaladana* (Ipomœa Hederacea) is a good stomachic and laxative.

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88. BALSAMODENDRON OPOBALSAMUM.

(*N. O.*—BURSERACEÆ.)

Arab.—Akulla-balasan ; Habel-balsana. *Bom.* & *Hind.*—Rogan-i-balsan *Eng.*—Balm of Giliad ; Balm of Mecca. *Ind.*—Donhula Balashana (oleo-resin).

Habitat.—Arabia. The gum or balsam is obtained in Indian bazaars.

Parts Used.—The balsam or oleo-resin, fruit and wood.

Action.—The fruit is carminative, expectorant and stimulant. The balsam is astringent and demulcent.

Uses.—*Decoction* of wood and fruits (1 in 20) is used in doses of half to one ounce. The fruit is given in combination with gum acacia, in chronic coughs, dysentery and diarrhœa. A *paste* of it is locally applied to indolent ulcers, recent cuts and bleeding wounds. The balsam is given in profuse mucous discharges from genito-urinary organs, as gonorrhœa, gleet, leucorrhœa and chronic catarrh in old persons.

Balsamodendron Pubescens similar to Balsamodendron Mukul.

Balsamodendron Roxburghii similar to other species of Balsamodendron.

Balsamodendron Zeylanicum—See Canarium Commune.

89. BAMBUSA ARUNDINACEAE & B. Apous & B. Orientalis & B. Spinosa

(*N. O.*—GRAMINACEÆ.)

Sans--Tavakshiri (silicious concretion or the milky bark or bamboo); Vonsa-lavanum; Vansa. *Eng. and Mah.*—Bamboo. *Hind. Ben. & Duk.*—Bhans. *Guz.*—Wans; Kapura. *Tel.*—Veduru. *Tam. & Mal.*—Moongil. *Can.*—Bedru. *Kon.*—Vaso. *Arab.*—Tabashira. (concretion). *Fr.*—Bambou-Commun. *Ger.*—Gemeiner Bambos.

Habitat.—Common in Central and South India, cultivated in Bengal & North-Western India.

Parts Used.—The stalks of female plant containing silicious concretions called *tabashir*, young shoots, articulations, seeds, and roots.

Constituents.—Tabashir contains silica 90 p.c., or silicum as hydrate of silicic acid, peroxide of iron, potash, lime, aluminia and vegetable matter.

Action.—Leaves are emmenagogue and anthelmintic. Tabashir is said to be stimulant, astringent, tonic, cooling, antispasmodic and aphrodisiac.

Preparations.—Decoction of leaves and of bamboo joints (1 in 20), dose.—1 to 2 ounces. Compound powder, dose.—1 drachm. Pickles and Poultice.

Uses.—The *young shoots* of the Bamboo made into a *poultice* is a most efficacious application for dislodgement of worms from ulcers. The *juice* is poured on the vermin and the liquid mass applied and secured by a bandage The *leaf-bud* is administered in decoction to encourage the free discharge of the menses or lochia after delivery when it is scanty. It is also used in leprosy, fevers and hæmoptysis. It is also useful in cases of children suffering from thread-worms. *Pickles* or curry prepared out

of the tender shoots give much benefit to persons suffering from lack of digestion as it is said to promote appetite and digestion. The silicious concretion found in the joints of the female bamboo is useful in cough, consumption. asthma, etc. A compound powder containing long pepper, cardamoms, cinnamon, sugar in $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ & 2 parts, respectively for 1 of Tabashir as an alterative in phthisis and cachexia; dose is 1 drachm. The *root* is given as a specific in eruptive affections. The grain is eaten by poor classes. The older drier stems make very efficient splints for fractures etc. The *seeds* resemble *rice and are eaten by* the poor. The tender shoots are also eaten like asparagus.

Barleria Longifolia—See Hygrophila Spinosa.

90. BARLERIA PRIONITIS.

(*N. O.*—ACANTHACEÆ.)

Sans.—Vajradanthi, Kurantaka, Koranta. *Hind.*—Catserina. *Ben.*—Kantajati *Guz.*—Kantaasherio. *Mah.*—Pivalakoranta or koreta. *Tel.* and *Can.*—Mullu goranta. *Tam.* & *Mal:*—Chemmulli. *Kon.*—Gorti.

Varieties.—White, red, yellow and blue coloured flowers.

Habitat.—This small spiny bush is met with in tropical India, abundant in Bombay, Madras, Ceylon, Assam and Sylhet.

Parts Used.—The leaves and root.

Preparations.—Paste, decoction of leaves and medicated oil.

Properties & Uses.—The *juice of the leaves* administered in a little honey or sugar and water is a favourite medicine in the catarrhal affections of children accompanied with fever and much phlegm; the dose is two tablespoonfuls twice a day. The juice of the leaves

of the white variety mixed with *jeera* is given in spermatorrhœa; the juice applied to feet in the rainy season prevents their cracking or laceration. The juice mixed with honey is applied to the bleeding teeth. It is also dropped into the ear in otitis. The leaves of the yellow variety bruised or their juice with or without pellitory root is kept in the hollow of the aching tooth. The *paste of the root* is applied to boils and glandular swellings with benefit. The *medicated oil* is applied to unhealthy wounds.

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91. BARRINGTONIA ACUTANGULA.

(*N. O.*—MYRTACEÆ.)

Sans.—Dhatriphala; Hijjala. *Hind., Bom., and Guz.*—Samudarphal. *Assam.*—Hindol. *Uriya.*—Kinjole. *Mah.*—Pivar; Sathphal, Dhatriphal. *Ben.*—Samandar. *Tam.*—Kadapam. *Tel.*—Kanapa; Kanagi; Kadanic.

Habitat.—Throughout India; plentiful in the plains of Bengal.

Parts Used.—The seeds or fruits, roots and leaves.

Constituents.—Starch, proteid, cellulose, fat, caoutchouc, alkaline salts and an active principle allied to saponin, which is a watery solution forming a stable froth when shaken.

Action.—The seeds are aromatic, carminative and emetic; the root is bitter similar to cinchona in properties; also cooling and aperient.

Preparations.—Powder and Paste.

Uses.—*Seed* or *fruit* is given rubbed with the juice of fresh ginger in catarrhs of the nose and respiratory passages, and in colic to relieve flatus from the bowels. Rubbed with water it is *externally* applied to the chest to

relieve pain and cold and to the abdomen to relieve colic and flatulence. A few grains (of the *powdered seed*) are given as an emetic to children suffering from catarrh to induce vomiting. The *kernels powdered* and prepared with sago and butter are said to be useful in diarrhoea. The powdered seeds are used as snuff in headache. The *juice* of the *leaves* is given in diarrhœa. The seed or fruit rubbed with black pepper and lime juice into a paste is given in 5 grains doses to relieve seminal weakness. A powder composed of 5 parts of *Samundrapala*, 1 of *Nirgundi* (Vitex Negundo) and 6 of sugar is given in 10-grain doses with much benefit in cases of gonorrhœa.

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92. BARRINGTONIA RACEMOSA.

(*N.O.*—Myrtaceæ).

Sans:—Vishaya; Samudrapad; Samstravadi. *Ben.*—Samudraphal. *Kon.* & *Can.*—Nivar. *Tam.*—Sametrapalam. *Mal.*—Samudra-pad. *Guz* & *Hind*—Norvishee. *Pers.*—Jadvar.

Habitat—Sea coast—Konkan.

Parts Used.—The root and fruit or seed.

Preparations.—Infusion of root (1 in 10), dose.—2 to 6 drachms. Powder and Paste of the seeds.

Action and Uses.—The *root* is similar to cinchona in medicinal virtues. It is deobstruent and cooling. The *fruit* is efficacious in coughs, asthma and diarrhœa. The *pulverized fruit* is used, like the preceeding drug as a snuff in hemicrania and combined with other remedies it is applied externally in diseases of the skin. The *seeds* (fruits) are aromatiç and useful in colic given in milk and also in parturition; in ophthalmia they are applied as collyrium in the form of thin *paste* prepared in pure cow's ghee.

Barringtonia Speciosa—See Mammea Asiatica.

93. BASELLA ALBA; B. Rubra; B. Lucida; B. Cordifolia.

(*N.O.*—BASELLACEÆ).

Sans.—Apœdika. *Eng.*—Indian Spinach or Malabar Night-shade. *Hind.*—Poyi. *Ben.*—Rukhtopuri. *Tel.*—Bachali. *Tam.*—Pachalai. *Can.*—Basale. *Mal.*—Pachala. *Kon.*—Vali. *Bom.*—Velgond; Mayalubhaji.

Habitat.—Every part of India especially in Lower Bengal and Assam.

Parts Used.—The entire herb. The root, leaves, stalks and all.

Constituents.—The plant contains a good deal of mucilage. It contains iron.

Action—Demulcent and diuretic.

Preparations.—Spinage, Poultice, Decoction and Mucilage.

Uses.—It is used as a substitute for spinach. It makes a wholesome and a most easily digested *spinage* and acts as a mild laxative. The leaves are reduced to pulp and applied to boils, ulcers and abscesses to hasten suppuration. The *juice of the leaves* together with sugar-candy is useful in the catarrhal affections of children. It is administered with much benefit in gonorrhœa and balanitis. The leaf-juice thoroughly rubbed and mixed with butter is a soothing and cooling application for burns and scalds. The *decoction of the root* of the red variety (Basella-rubra) relieves bilious vomiting. The infusion of the dried leaves of Basella lucida makes a nice drink. The *mucilaginous liquid* obtained from the leaves and tender stalks of this plant is a popular remedy for habitual headaches; it is applied to the head about

half an hour before bathing; it will produce a cooling sensation and bring on sound refreshing sleep. Basella cordifolia-leaves are edible; its fruits furnish a purple dye.

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94. BASSIA LATIFOLIA.

(*N. O.*—SAPOTACEÆ.)

Sans.—Madhookah. *Eng.*—The Indian Butter tree; Mahwah tree. *Hind.*—Jangli Mohwa. *Guz.*—Mahuda. *Mah.*—Mowda. *Tel.*—Ippachettu, Madhookamu. *Tam.* & *Mal.*—Madhookam Illupai. *Can.*—Ippe-mara. *Ben.*—Maua. *Pers.*—Ippicha; Mohecha.

Habitat.—Bombay Presidency, Bengal and South Indian forests and Ceylon.

Parts Used.—The flowers, oil of the seeds, leaves and bark.

Constituents.—Flowers contain sugar, cellulose, albuminous substances, ash, water etc. The seeds contain oil, fat, tannin, extractive matter, bitter principle probably saponin, albumen, gum, starch, mucilage and ash. The ash contains silicic, phosphoric and sulphuric acids, lime and iron, potash and traces of soda. The juice contains caoutchouc, tannin, starch, calcium oxalate, gum, resins, formic and acetic acids and ash. The oil is a mixture of 80 p.c., of stearin (separated crystals of stearic acid) and 20 p. c. of olein.

Action.—The fresh juice is alterative and the spirit distilled from the flowers is a powerfully diffusible stimulant and an astringent tonic and appetiser. The flowers are at once cooling, demulcent, tonic, nutritive and stimulant. The liquor obtained from the flowers by distillation contains a large amount of empyreumatic oil which is apt to cause gastric irritation in large doses.

Preparations.—Decoction of the flowers and concrete oil of the seeds.

Uses.—The *fruit* is eaten. The fruit or the seed or the kernels yield a thick *concrete oil* which is useful for application in skin diseases and to the head in cephalalgia. The *leaves* boiled in water form a good stimulant embrocation. The *bark in decoction* is a remedy for rheumatic affections; rubbed on the body it cures itch. The residue cake after the extraction of oil is used as an emetic; the smoke produced in burning the cake is reputed to kill insects and rats. *Decoction of the flowers* is useful in coughs. The flowers mixed with milk are useful in impotence due to general debility; one ounce with eight ounces of fresh milk is the dose. The *dried flowers* are used as a fomentation in orchitis for their sedative effect.

95 & 96. Bassia Longifolia & Bassia Butyraceæ are other members of the same species used in rheumatism by Vaids. The kernels of B. Butyraceæ yield from 60 to 65 p. c., of fat whitish in colour and of agreeable odour; even used for edible purposes. The butter is an excellent emollient application for itch chapped hands etc., during winter; also it is an ointment in cases of rheumatism, paralysis &c.

Batatas Paniculata.—See Ipomœa Digitata.

Bauhinia Purpurosa and B. Racemosa—See Bauhinia Variegata.

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97. BAUHINIA TOMENTOSA.

(*N. O.*—LEGUMINOSÆ).

Sans.—Phalgu. *Hind. & Ben.*—Kachnar. *Guz.*—Asundro *Mah.*—Pivala Kunchan. *Tel.*—Adavimandaramu. *Tam. & Mal.*—Kattatti. *Can.*—Kadatti. *Kon.*—Chamel. *Madras*—Esamaduga.

Habitat.—Throughout India to Ceylon.

Parts Used.—The whole plant.—root, bark, leaves, buds, young flowers, seeds and fruit.

Constituents.—Tannin.

Action.—The plant is antidysenteric and anthelmintic. The fruit is diuretic. The seeds have a tonic and aphrodisiac action.

Preparations.—Decoction, Infusion and Paste.

Uses.—The *decoction of the root-bark* is useful in inflammation of the liver ; used also as a vermifuge. The *infusion* is a useful gargle in aphthae. The *dried leaves*, buds and young flowers are prescribed in dysentery. The *seeds* may be eaten for their tonic and aphrodisiac action. The seeds made into a *paste* with vinegar is an efficacious application to wounds inflicted by poisonous animals. The bruised *bark* ground with rice-water into a paste is externally applied to tumours and wounds such as scrofulous.

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98. BAUHINIA VARIEGATA.

(*N. O.*—LEGUMINOSÆ.)

Sans.—Kanchanara. *Hind.*—Kachnar. *Ben. and Mah.*—Rakta-kanchan. *Guz.*—Kovidara. *Tel.*—Devakanchanamu. *Tam.*—Shemmandarai. *Can.*—Kempu mandara. *Mal.*—Chuvan-na-mandaram

Habitat.—Sub-Himalayan tract and the forests of India and Burma.

Parts Used.—Bark, roots, buds and gum.

Constituents.—The bark contains tannin (tannic acid), glucose and a brownish gum.

Action.—The bark is alterative, tonic and astringent. The root is carminative and flowers are laxative.

Preparations.—Emulsion, Pill, Paste, Gargle and Decoction (1 in 10), dose:—½ to 1 ounce.

Uses.—A *gargle* made from the *bark* with the addition of *Akakia* (extract of acacia pods) and pomegranate flowers is a remedy in salivation and sorethroat and a *decoction of the buds* in cough, bleeding piles, hæmaturia and menorrhagia. The *bark* rubbed into an emulsion with rice-water and administered with the addition of ginger in scrofulous enlargement of the glands of the neck. The *decoction of the bark* is a useful wash in ulcers and skin-diseases and a remedy in diarrhoea. The *dried buds* also are useful in diarrhœa and in worms as well as in piles and dysentery. The decoction of the *root* is given in dyspepsia and flatulence; it is also an anti-fat remedy and therefore valuable for corpulent persons. The *flowers* with sugar is a gentle laxative. A paste made of the bark together with dried ginger (*sunta*) is applied to scrofulous tumours. A preparation known as *Kanchanara guggula* made of the following ingredients is said to be useful in scrofulous tumours, ulcers, skin diseases, gonorrhoea, dropsy, etc. It is given in doses of half a tola every morning with a decoction of Sphaeranthus Mollis or of *Triphala* or of Catechu:—Take of the bark of Bauhinia Variegata 10 parts, the three myrobalans, ginger, black-pepper, long-pepper, the bark of Crataeva Nurvala, Cardamoms, Cinnamon and *Tejpatra* leaves each one part. Powder them all, add *Guggula* 15 parts to make a pill mass.

99. BENINKASA CERIFERA.

(*N. O.*—CUCURBITACEÆ.)

Sans.—Kushmanda. *Eng.*—White Gourd Melon. *Hind.*—Golkaddu. *Duk.*—Petha. *Ben.*—Kumra. *Guz.*—Kohwla. *Mah.*—Kohala. *Tel.*—Boodigummadi. *Tam.*—Kalyan-pooshini. *Mal.*—Kumbalam. *Can.*—Bile or Budi Kumbala. *Kon.*—Kuvale.

Habitat.—Cultivated in gardens throughout India; resembles pumpkin in appearance.

Parts Used.—The seeds, fruit and fruit-juice.

Constituents.—Fixed oil 44 p.c., starch 32 p.c., an alkaline cucurbitine, an acrid resin, proteids, myosin, vitellin, sugar 4 p.c.

Action.—Fruit is nutritive, tonic and diuretic; also alterative and styptic and a valuable anti-mercurial. The seeds deprived of the outer covering are vermifuge (against tape-worms and lumbrici) and diuretic. The confection is alterative, tonic, diuretic and restorative.

Preparations.—Confection and *ghrita*.

Uses.—The seeds are useful in tænea. The fresh juice of the fruit is administered as a specific in hæmoptysis and other hæmorrhages from internal organs, while a slice is applied to the temple. The fresh juice is often used as a vehicle to administer pearl-ash for the cure of phthisis in the first stage. It is also useful with or without the addition of liquorice in insanity, epilepsy and other nervous diseases. It is a good antidote for many kinds of vegetable poisons; also in mercurial and alcoholic poisonings. In diabetes the juice of the cortical portion 4 ounces with powdered saffron and red rice bran 100 grains each, is given morning and evening with strict diet. The fruit is cooked in curries and also

made into sweetmeats or confections. The preserve is given in piles and in dyspepsia as an anti-bilious food. It is a highly nutritious food in wasting diseases as consumption. It is prepared in ghee and sugar with the addition of *pipali*, *sunta*, white cumin seeds, coriander seeds, cardamoms and cinnamon (*dalchini*) in the proportions of 1 part of each to 10 parts of white gourd, (*Kohala*). A preparation known as *Khanda Kooshmanda* or Confection of Squash or White gourd, made with several useful ingredients is administered in hæmoptysis, phthisis, marasmus, cough, asthma, ulceration of the lungs, hoarseness etc., in doses of 1 to 2 tolas according to age and strength. *Vasa Kushmanda Kanda*, another preparation is used in cough, ásthma, phthisis, hæmoptysis, heart disease and catarrh. Yet another preparation "*Kushmanda Ghrita*" is given in insanity, epilepsy and other nervous diseases in doses of 1 to 2 tolas.

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100. BERBERIS ARISTATA or B. Asiatica or B. Lycium.

(*N. O.*—BERBERIDEÆ.)

Sans.—Pita-daru ; Daruharidra. *Eng.*—Indian or Nepal or Ophthalmic Barberry, Tree-turmuric ; False Calumba. *Hind.*—Rasaut ; Chitra. *Pers*,—Filzahrah. *Ben.*—Darhaldi. *Mah.*—Daruhalad. *Bom. and Hind.*—Jharki-halad. *Can.*—Doddamaradarsina. *Tam. and Mal.*—Maramanjal ; Kasturi-manjal ; *Tel.*—Kasturi-paspu.

Habitat.—The barbery bushes grow on the Nilgiris and all over the temperate Himalaya, from Bhutan to Kunawer.

Parts Used.—The extract, fruit, root-bark, stem and wood.

Constituents.—The root and wood contain a yellow alkaloid "berberine" a bitter substance, which dissolves in acids and forms salts of the alkaloid ; the root contains two more alkaloids.

Action.—Tonic, stomachic, astringent anti-periodic, diaphoretic, anti-pyretic and alterative.

Preparations.—Tincture (1 in 10), dose :—1 to 2 drachms; infusion (1 in 20), dose:—1½ to 3 ounces; extract (1 in 8), dose :—10 to 30 grains, (Rasanjana or Rasavanti). This is prepared from powdered stem by exhaustion with water, filtration and mixture with cow's milk and final evaporation.

Uses.—The tincture is largely used in cases of remittent as well as intermittent fevers and also in debility consequent therefrom ; very valuable in periodic neuralgia. As diaphoretic and antipyretic it is said to be equal to quinine and Warburg's tincture, and as a diaphoretic it may be used in place of James' powder. As an anti-periodic it has some advantage over quinine and cinchona, since frequently repeated doses do not produce depression of the heart or deafness and it may be used during the attack of fever. The tincture is said to be specially valuable in cases of enlargement of the liver and spleen. It is much recommended in fevers accompanied by bilious symptoms and diarrhœa. A crude extract known as *Rasaut*, *Rasavanti* or *Rasanjana* and prepared from the root-bark is used as a local application in affections of the eyelids and in chronic ophthalmia in which it is painted over the eyelids [occasionally combined with opium, rock-salt and alum. In bleeding piles it is adminis-

tered in doses of 5 to 15 grains with butter. Its *solution* (1 in 32 of water) is used as a wash for piles. Its *ointment* made with camphor and butter is applied to pimples and boils. A simple *decoction* of it, with honey is given in jaundice. With the addition of embellic myrobalan, the decoction is useful in painful micturition from bilious or acrid urine. *Externally* the decoction of the root-bark is used as a wash for unhealthy ulcers and is said to improve their appearance and promote cicatrization. *Rasaut* mixed with honey is said to be a useful application to aphthous sores, abrasions and ulcerations of the skin. The following are a few useful formulas:—

(1) Take of Indian barberry 5, *Rasavanti* (barberry-extract) 2, *Mustaka* (Cyperus Rotundas) 3 marking-nut (Semecarpus Anacardium) 2, Bael fruit 5, *Vasaka* (Adhatoda Vasika) 5, and Chiretta 5 parts. Mix and make a decoction in the usual way; when ready add honey 4 parts. Dose :—½ to 1 drachm. Given in Leucorrhœa, Menorrhagia, etc.

(2) Take of Indian barberry 5, Indian Sorrel (Oxalis Corniculata) 4 and Honey 3 parts. Mix and make a pill mass. Dose :—grains 4 to 6. Given in painful micturition, acid urine, etc.

(3) Take of *Rasavanti* (extract of Barberry), Ativisha (Aconitum Heterophyllum), *Kurchi* or Conessi bark (Holarrhena Antidysenterica), each 1 part and *Dhauriphula* (flowers of Woodfordia Floribunda) 3 parts. Mix and make a powder. Dose :—1 drachm. Given in bilious diarrhoea, indigestion, etc.

(4) Take of extract of Barberry 2, Opium 2, Alum 3, Rocksalt 4, and Chebulic Myrobalan 2 parts.

Mix and make a paste. Applied locally to inflammatory swellings and as a collyrium for the eyes in conjunctivitis.

(5) Take of *Rasavanti* 5 grains; Kernel of Nim seeds 2 grains; Raisins 10 grains. Beat all together into a mass and make it into three pills. Dose :—One pill to to be taken at bed time in case of piles.

(6) Take of Barbery root 6 ounces and water 2 pints. Boil down to 1 pint. Dose ;—2 ounces three times a day, as a diaphoretic and bitter tonic.

101. **Berberis Vulgaris** is a member of the same species met with in Himalayas from Nepal and Tibet to Afghanistan with similar virtues and uses; it is specially valuable in scarlet fever and brain affections.

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102. BERGERA KOENIGII.

(*N. O.*—AURANTIACEÆ.)

Sans—Surabhinimba ; Krishnanimba. *Eng.*—Curry-leaf tree. *Hind.*—Karaypak. *Ben.*—Bursunga. *Mah.*—Kadhecnimba. *Tel*—Karivaepamu. *Tam.*—Karuveppilai. *Kon.* & *Can.*—Karibevu. *Mal.*—Kariveepu. *Cing.*—Karapincha.

Habitat.—From Garhwal to Sikkim, Bengal and southward to Travancore.

Parts Used.—The bark, root and leaves.

Constituents.—The leaves contain a volatile oil, resembling the oil of Aegle Marmelos, a resin and a crystalline principle named *Koenigin* ; the seeds yield an oil of which the properties are not yet ascertained.

Action.—The leaves, bark and root are tonic and stomachic. The root is also slightly purgative.

Preparations.—Infusion and decoction.

Uses.—The infusion of the *root-bark* or of the *leaves* is useful in vomiting. The green tender leaves are eaten raw for the cure of dysentery. When boiled in milk and ground they form a good application to poisonous bites and also to eruptions. The docoction of the leaves is given with bitters as a febrifuge in fevers. The leaves are popularly used for flavouring curries and condiments.

103. **Brazil Nuts** are the seeds of **Bertholletia Excellsa,** of the Natural Order of Myrtaceæ. They grow wild in the forests of Brazil. In India they are grown in the Southern parts of Konkan. They are said to be a most useful food-medicine in cases of constipation and piles. One pound of the nuts yields eight ounces of kernels and these contain five ounces of oil; the remaining substances consists of proteids and some mineral matters. Brazil nuts are laxative, therefore not more than two ounces of the kernels should be eaten at one meal. If they are well masticated they will not disagree. The kernel of the nut is an excellent substitute for suet and may be used for cakes and fruit puddings in the proportion of 1 part of the kernels to 3 parts of flour. Bean and Brazil-nut *puree* is made by cooking beans, passing them when tender, through a sieve and adding to them kernels of the nuts (1 to 8 parts of the beans) and reboiling the whole for half an hour.

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104. BETA VULGARIS.

(*N. O.*—Chanopodiaceæ.)

Eng.—Garden Beet; Common Beet. *Hind.*—Chukander.

Habitat.—A native of the coasts of the Mediterranean, now extensively cultivated in Europe and America, and is

known as sugar-beet. It is also cultivated in gardens in many parts of India for the sake of its roots and leaves. There are two kinds.—White and red.

Parts Used—.Roots and leaves.

Constituents.—The beets owe their medicinal uses to an active principle "*betin*".

Action.—*Betin* is an active emmenagogue; it also acts as resolvent on the vitiated secretions of stomach and bowels; Dose is from 2 to 4 grains given thrice a day. The white beet is laxative and diuretic; red beat is emmenagogue.

Preparations..—Infusion or decoction of the root & Betin, the alkaloid.

Uses.—The *juice of the root* is sniffed up the nose for headache and toothache; the juice of the white beet is good for the liver. Applied to the temples it stops inflam ation of the eyes. Mixed with oil and alum it is good for burns. A decoction of the root is given in doses of half to one tumblerful at bedtime or early morning an hour before breakfast, in cases of habitual constipation and hæmorrhoids with much benefit. The red beet is valuable in uterine diseases. *Externally* the decoction with a little vinegar added heals the itch, cleanses scurf and dandruff from the head and is excellent for all kinds of ulcerous and running sores. *Dietetically* the beets baked or boiled are used as a salad in England and as a common table vegetable in France and Germany. The *leaves* of the white variety are used as a substitute for spinach.

105 BIXA ORELLANA.

(*N. O.*—BIXINEÆ.)

Eng.—The Arnotta plant or the Annatto (the orange-red dye). *Hind.*—Senduria. *Ben.*—Latkan; Watkana. *Assam.*—Jolandhar. *Uriya.*—Gulbas. *Chittagong.*—Sowasi. *Duk.*—Shabke-pandeka-jhad. *Bom. and Mah.*—Kesari; Shendri. *Tel.*—Jaffrachettu. *Tam.*—Jaffra-maram. *Can.*—Kappumankala; Rangamali. *Mal.*—Korangumunga. *Hind.*—Gowpurgee. *Fr.*—Rocou. *Ger.*—Achter Orbanbaum.

Habitat.—Cultivated throughout India (for the dyes)

Parts Used.—The seeds, seed-pulp and root bark.

Preparations.—Powder of the seed, pulp and decoction.

Action.—The pulp surrounding the seeds is astringent. The seeds are cordial, astringent and febrifuge. The root-bark is anti-periodic and antipyretic.

Uses.—The *root-bark* and the *seeds* form a very good remedy for gonorrhoea. The root-bark is of much use in uncomplicated intermittent, remittent and continued fevers, as also the seeds in the form of decoction; it may be given during the absence as well as the presence of fever in intermittent cases. The *seed-pulp* is used by American Indians, to paint their body all over to prevent mosquito-bites. It is used as a remedy for dysentery. The reddish waxy pulp covering the seeds is dissolved in water, dried to the consistency of putty and made up into rolls or folded in leaves, or dried still more and made into cakes. The yellow coloring matter contained in the seeds is employed as a dye.

106. BLUMEA BALSAMIFERA and B. Densiflora.

(*N. O.*—COMPOSITÆ.)

Sans.—Kukundara, kukkura-dru (Dog-bush). *Ben.*—Kukur-soka: Kuksungh. *Hind.*—Kukronda. *Burm.*—Pung-ma-theing. *Mal.*—Sombong: Banga-chappa. *China.*—Nagi.

Habitat.—Tropical Himalaya.

Parts Used.—The leaves and sometimes the herb.

Constituents.—Both the species contain a volatile oil of the odour of worm-wood, and a camphor known as *Nagi* Camphor; it is said to have the same physical properties as Borneo Camphor, but differing in optical properties.

Action.—Astringent and anthelmintic.

Preparations.—Decoction of the dried herb and powder of the leaves.

Uses.—*Externally*, fresh *juice* of the leaves is dropped into the eyes in chronic purulent discharges. *Internally* the *decoction* is given for worms and also in dysentery and chronic uterine discharges. It is said to be particularly useful in the disease of the nose called "Ahwah" peculiar to Bengal, and accompanied by strong fever, heaviness in the head, and pains in the neck, shoulders and loins. The *powder* of leaves is given internally in two drachm doses mixed with butter, and it is also used as a snuff.

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107. BLUMEA LACERA and B. Aurita

Sans.—Kukuradru. *Hind.*—Kukurbanda; Divalimuli. *Ben.*—Kukursunga. *Bom.*—Jangalimuli. *Mah.*—Bhamaburada *Guz.*—Kalara: Chancharamari. *Arab.*—Kamaphilusa.

Habitat.—This shrubby and downy plant of terebinthaceous odor is found in Eastern parts of India.

Parts Used.—The whole plant.

Constituents.—See the preceding species.

Action.—Aromatic, astringent, stomachic, antispasmodic and emmenagogue; also diuretic as it increases the flow of urine.

Uses.—Similar to those of the preceding ones. It is very useful in various catarrhal affections. It is used to drive away fleas as it is highly odorous.

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108. BOERHAVIA DIFFUSA or B. Erecta or B. Procumbeno or B. Repens.

(*N. O.*—Nyctagineæ.).

Sans.—Punarnava; Sotagni. *Eng.*—Spreading hogweed. *Hind.*—Beshakapore; Gadhaparna; Thikri: Sant. *Ben.*—Gandhapurna, Swetapoorna. *Guz.*—Vakha-Khaparo; Ghetuli; Satodimool, Motosatado. *Tel.*—Attatamamidi. *Tam.*—Mookkiratti; Kadiyirattam. *Can.*—Sanadika; Gonajali. *Mal.*—Tamilama, Talutama. *Mah.*—Punanava; Khapra; Vasu.

Habitat.—Found all over India; it is of two kinds, one with white and other with red flowers. The former is used in medicine.

Parts Used.—The herb and root.

Constituents.—It contains an alkaloidal sulphate (*punarnavine*) 0·01 p·c.; potassium nitrate 6·41 per cent; an oily amorphous mass; sulphates and chlorides and traces of nitrates and chlorates form the ash,

Action.—Bitter, stomachic, laxative, diuretic, expectorant and emetic. The root is purgative, anthel-

-mintic and febrifuge. The active principle is a diuretic chiefly acting on the glomeruli of the kidney through increasing the heart-beats and strengthening and raising the peripheral blood-pressure in consequence. On liver the action is principally secondary. On other organs the drug has practically no effect.

Preparations.—Powder, paste, oil, decoction or infusion (1 in 20) and electuary.

Uses.—The drug may be given in conditions where there is lessened secretion or where increased secretion of kidney is wanted; thus in all renal affections stopping secretion of kidney, in ascites either from cirrhosis of liver or heart or kidney. As it increases the systole of the heart it may be useful in all stenosed conditions of the valves. Where there is dropsy and ascites due to weakness of heart this drug may do much good by relieving the circulation through the kidney. In pleurisy and some such conditions of accumulation of fluid in the cavities, the drug may be useful as it increases the quantity of urine. The *juice of the leaves* is used in hepatic disorders as jaundice; with honey it is dropped into the eyes in chronic ophthalmia. The *root* is used in *powder* in drachm doses or *decoction* or *infusion* as laxative. As diuretic it is useful in strangury, gonorrhoea and other internal inflammations; in moderate doses it is successful in asthma; in large doses it will produce vomiting on account of its emetic properties. In dropsy the *decoction* of the root is administered together with powdered chiretta, ginger and about 15 grains of nitrate of potash; it is also applied externally. In mild cases a dish of the fresh herb boiled, salted and eaten with bread (*chappaties*) together with any other medicinal treatment does give

much relief. The following is the method of preparing an Ayurvedic remedy known as "*Punarnavastaka* :—Take of *punarnava* root, nim-bark, leaves of Trichosanthus dioica (*patol*), ginger, Picrorrhiza kurroa (*katuki*). chebulic myrobalan, *gulancha* and the wood of Berberis Asiatica (*daruharidra*) quarter of a tola each, water 32 tolas; boil together till reduced to one-fourth. This decoction is given in general anasarca with ascites, cough, jaundice, difficulty of breathing etc. (Chakradatta). An *oil* prepared from the root and a number of useful aromatics in the form of a paste is rubbed on the body in general anasarca complicated with jaundice. It is called *punarnava taila* (Sarkaumudee). Bhavaprakasa gives an electuary under the name of *Punarnava leha*. It is prepared with a decoction of the root and a number of other ingredients and is used in strangury or scanty urine. A *paste* made of the root together with Colchicum, Solanum Nigrum, Tamarind stone (*Chinchok*), Stag's horn, and dried ginger (*Sunta*) all equal parts, is an application to rheumatic and gouty painful joints. The root of the *B. Repens* is an ingredient in the preparation of *surma*, an application to eyelids.

Boletus Crocatus.—See Agaricus Ostreatus (Fungus.)

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109. BOMBAX MALABARICUM or B. Heptaphylla.

(*N. O.*—MALVACEÆ.)

Sans—Rakta shalmali; Mahavriksha; Panchaparni; *Eng.*—Silk Cotton tree *Hind.*— Nurma; Deokapas; Huttian. *Ben.*—Ruktasimal. *Tel.*—Mundlaboorugachettu; Poor; Patti; *Tam.*—Elevam. *Can.*—Boorugada-mara. *Duk.*—Lal.

Katyan. *Mal.*—Mullulavamarum: Samparuthi: Poola. *Kon.*—Savarikappusu. *Bom.*—Shembal Savari. *Guz.*—Ratoshemalo. *Mah.*—Tambdi-savaru.

Habitat.—Throughout the hotter forest regions of India. Cultivated also in gardens.

Parts Used.—The gum, seed, leaves, fruit or capsule, tap-root, bark, cotton and flower.

Constituents.—The seeds yield a good non-drying oil. The gum called *Mocharas* or *Supari-ka-phul* contains tannic and gallic acids.

Action.—The gum is astringent and styptic. The tap-root especially of the young plant is demulcent, tonic, slightly diuretic and aphrodisiac. The bark is demulcent, diuretic, tonic and slightly astringent. The bark and the root are emetic. The roots known as *Musla* or *Semul musla* have stimulant and tonic properties. The flowers are laxative and diuretic.

Uses.—The *gum* is useful in doses of 20 to 40 grains in diarrhoea, dysentery, menorrhagia and other affections in which astringents like kino and catechu are useful. The *leaves* ground and mixed with milk are given for strangury. The *petals* squeezed and soaked in human or cow's milk form a soothing application for conjunctivitis of infants. The leaves ground into paste are applied to skin eruptions. The *tap-root* is used for gonorrhoea and dysentery. The dry *young fruits* are beneficial in calculous affections and chronic inflammation and ulceration of the bladder and kidneys including strangury and all other forms of dysuria except those depending on mechanical causes. The fruits are also useful in weakness of the genital organs and in most of the disorders in which

gentian and calumba are resorted to. The *seeds* have good effect in gonorrhoea, gleet, chronic cystitis, consumption and catarrhal affections especially when combined with half the quantity of cumin and anisi-seeds and an eighth part of silicious secretion of Bamboo. The *cotton* is employed *externally* for its mechanical properties (softness and elasticity) in padding splints and covering burnt and inflamed surfaces. The dry *flowers* with poppy seeds, goat's milk and sugar are boiled and inspissated and of this two drachms are given three times a day in hæmorrhoids. The *bark* is used externally in inflammations and cutaneous eruptions in the form of a paste. In the dysentery of children the following Ayurvedic preparation is used.—Take of *mocharasa*, flowers of Woodfordia floribunda, root of Mimosa pudica and the filaments of the lotus, equal parts, in all one tola, powdered rice one tola, water 11 tolas, and boil together to the consistence of a gruel (Bhavaprakasa). In the dysentery of adult a decoction of *bela* fruit in goat's milk is given with the addition of powdered *mocharasa* and *Indrayava* seeds (Chakradatta). The following are a few very useful home-remedies :—(1) Take of *Mocharasa* 1, and *Indrayava* (Holarrhena Antidysenterica) 2 parts Mix and make a powder. Dose.—5 grs. Given in dysentery. It is swollowed with a draught of the decoction of *Bela*. (2). Take of *Mocharas* 2, poppy seeds 3, *Utakantaka* or *Brahmadandi* (Tricholepis Glaberrina) dried leaves 4, seeds of Cowhage plant (Mucuna Pruriens) 3, *Safed musli* (Asparagus Adscendens) 5, *Satavari* 4 and Mastich gum (Pistacia Lentiscus) 3 parts. Mix and make a powder. Dose :—10 to 15 grains. Given in seminal debility. (3) Take of *Mocharas*, Bael fruit, the kernel of

mango-seed or stone each 1 drachm and opium 5 grains. Mix and make a powder. Dose is from grains 20 to 40. Useful in dysentery and dysenteric diarrhoea.

Bombax Pentadrum.—See Eriodendron Anfractuosum.

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110. BORASSUS FLABELLIFORMIS.

(*N. O.*—PALMACEÆ.)

Sans.—Tala. *Eng.*—Palmyra palm; Brab tree. *Hind.*—Tari. *Guz.*—Tad. *Ben.*—Tal. *Mah. and Kon.*—Talatmad. *Tel. and Can.*—Tali. *Tam.*—Panaimaram. *Mal.*—Talam; Pana.

Habitat.—Dry soils throughout tropical India.

Parts Used.—The root, flowering stalk, juice, bark and fruit.

Constituents.—Gum, fat and albuminoids.

Action.—The root is cooling and restorative; the juice is diuretic, cooling, stimulant and antiphlogistic when fresh; the pulp from the unripe fruit is diuretic, demulcent and nutritive; the terminal buds are nutritive and diuretic.

Preparations.—Palm juice and palm-wine; confection; sago from the trunk; poultice; pulp; ashes of the flowering-stalk and decoction.

Uses.—It is from this tree that toddy, jaggery and country-sugar are prepared in large quantities in Southern India. The sugar-candy produced in the manufacture of sugar from the palm is used in cough and pulmonary affections. The fresh saccharine juice obtained by excision of the spadis early in the morning is cooling; also acts as a laxative taken regularly for several mornings; it is useful for inflammatory affections and dropsy; also

in gastric catarrh and to check hiccup; as diuretic it is useful in gonorrhoea. Slightly fermented juice called *Tari* (toddy) is given in diabetes. With aromatics it is a good tonic in emaciation or phthisis. The *milky fluid* from the immature fruits is sweet and cooling and checks hiccup and sickness. The *toddy poultice* prepared by adding fresh drawn toddy to rice flour and subjected to a gentle fire till fermentation takes place, then spread on a cloth forms a valuable stimulant application to gangrenous and indolent ulcers, carbuncles etc. The yellow *pulp* surrounding the ripe nuts is sweet, but heavy and indigestible. The *ashes* of the flowering stalk are said to be useful in enlarged spleen. The *bark* of the tree burnt, reduced to charcoal and pulverised makes a good dentifrice; the decoction of the bark with a little salt added to it is a good astringent gargle for strengthening gums and teeth.

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111. BOSWELLIA GLABRA
B. Thurifera or B. Serrata.

(*N. O.*—BURSERACEAE).

Sans.—Kapitthaparni Konkanadhoopam; Salakhi. *Eng.*—Indian olibanum or Frankincense. *Fr.*—Boswellie-dentelee. *Ger.*—Indischerweihrauch-baum. *Hind.*—Lobhan. *Ben.*—Luban, Salai, Kundre. *Guz.*—Dhup-gugali. *Mah.*—Pahadi dhup, Vishesh-dhup. *Tel.*—Parangi-sambrani. *Tam.*—Kundrikam. *Mal.*—Sambrani. *Can.*—Guggula, Vishasha-dhoop *Duk.*—Kundur. *Bom.*—Gandhabiroz.

Habitat.—Mountainous tracts of Central India and on the Coromandal Coast.

Parts Used.—Gum-resin and oil.

Action.—The resin is a bitter aromatic of a balsamic order when burnt, and is used as refrigerant, diuretic,

emmenagogue and ecbolic. The oil is stimulant. It is called Olibene.

Uses.—The fragrant *resin* is largely consumed as an incense in houses especially during religious ceremonies; as astringent in the form of ointment it is useful in chronic ulcers, diseased bones, buboes etc, in which it promotes absorption. The resin rubbed in cocoanut oil or lemon juice is an application to foul ulcerations. The *gum* is used in rheumatic and nervous diseases, scrofulous affections, urinary disorders and in skin diseases generally combined with aromatics; mixed with ghee it is prescribed in gonorrhœa and in syphilitic cases; with cocoanut oil it is applied to sores and it stimulates the growth of hair; *internally* it acts as stimulant expectorant in pulmonary diseases, in bronchitis &c Mixed with gum acacia it is used as a corrective for foul breath. If taken for a length of time in one ounce doses it is said to reduce obesity. The *oil* in 10 to 20 minim doses is useful in gonorrhœa taken in demulcent drinks. Dose of the gum-resin is from 5 to 40 grains used in aphthæ, placenta previa, amenorrhœa, dysmenorrhœa, sore nipples, gonorrhœa and ringworm. As a slight hepatic stimulant it is used in jaundice not caused by mechanical obstruction and also in some chronic cases of diarrhœa, dysentery, dyspepsia and hæmorrhoids.

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112. BRASSICA ALBA, or Campestris.

(*N. O.*—CRUCIFERÆ).

Sans.—Svetasarisha; Siddhartha. *Eng.*—White mustard. *Hind* & *Guz.*—Sufedrai. *Pers.*—Sipandanc-sufaid. *Ben.*—Dhop-rai. *Mah.*—Mohori-pandri. *Tam.*—Kadugu. *Mal.*—

Vella-kadugu. *Tel.*—Avalu. *Burm.*—Kungziyan. *Cing.*—Rataba. *Fr.*—Moutarde Clanche. *Ger.*—Weisser-senf.

Habitat.—Extensively cultivated in India; indigenous to Western Asia.

Parts Used.—Seeds; powder of the seeds and an oil.

Constituents.—The white seeds contains a bland fixed oil 23–25 per cent., a crystalline substance called "*sinalbin*," sinapin sulphocyanide, lecithin, mucilage (only in testa); myrosin a ferment; proteids, ash 4 per cent., consisting of the phosphates of potassium, magnesium and calcium.

Action.—Mustard flour is nervine stimulant, emetic and diuretic. In small doses it promotes digestion and removes flatus. In large doses it is stimulant-emetic and narcotic-poison when given with hot water. The volatile oil is stimulant, rubefacient and vesicant.

Preparations.—Poultice, plaster, and liniment, all for external uses; a medicated oil, called *Siddhartha ghrita*, which is used internally, dose:—half drachm.

Uses.—The seeds are used externally like the ordinary mustard. The flower of this mustard made into a paste with water is applied as a stimulant *poultice or plaster* to the epigastrium in obstinate vomiting, cholera, etc; to the chest in spasmodic whooping-cough with difficulty of breathing and to the calf of the leg in cases of delirium, apoplexy etc. The interval of keeping the mustard plaster or poultice should not exceed 20 minutes. In cases of delicate women and children, thin muslin cloth should be laid between the skin and the poultice. The plaster and poultice are prepared in cold water. Mustard *seeds* are generally added to the foot-bath usually employed in

cases of high fever; as hip-baths they are used in uterine derangements especially amenorrhoea and dysmenorrhoea; in headache, cerebral congestion, in cardiac and chest pains mustard baths are locally applied; the *liniment* is applied to swollen joints. The oil from the white mustard is said to be a good edible oil. The seeds are said to be beneficial when administered internally in cases o nervous diseases such as epilepsy, hysteria and are recom - mended to be given with *Brahmi ghrita* in such cases The medicated oil called *Siddhartha ghrita* so administered in cases of epilepsy and hysteria is said to have given benefit; dose :—half a drachm.

113. **Brassica Campestris** *var* Rapa (*Eng*:—Turnip. *Hind.*—Shulgam) belongs to the Cabbage species. It is the thick fleshy underground stem or root of the plant. Medicinally the turnip is aperient and diuretic. Mashed and mixed with bread and milk it makes an excellent poultice for indolent sores. The green tops contain potash and provide an excellent spring medicine. It is generally used as a culinary vegetable in the form of soup, sauce etc.

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114. BRASSICA JUNCEA.

(*N. O.*—CRUCIFERÆ.)

Sans.—Rajika. *Eng.*—Indian mustard. *Hind. and Guz.*—Rai. *Ben.*—Raisarisha. *Tel.*—Avalu. *Tam.*—Kadugu. *Can.*—Sasive. *Mal.*—Kaduka. *Mah.*—Pivali Siras. *Guz.*—Sarsva.

Habitat.—Cultivated in many parts of India.

Parts Used.—The seeds and oil.

Constituents.—The seeds contain about 20 to 25 per cent. of oil. An essential oil is also produced by the action of water.

Action.—The whole plant is considered to possess bitter, aperient and tonic properties. The oil is stimulant and counter-irritant.

Uses.—Mustard *oil* is used as an external stimulant application in chest affections especially of children It is also used for culinary purposes. The oil combined with camphor forms an efficacious embrocation in muscular rheumatism, stiff neck etc. The *seeds* mixed with hot water form an efficient counter-irritant application. In cases of dengue fever also it is used with much benefit.

115. **Brassica Campestris** (*Sans.*—Raktasarshapa. *Eng.*—Rapeseeds) is another member of the same species with similar action and uses. The oil derived from the seeds is rubefacient. It is used in skin diseases. The tender leaves are eaten.

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116. BRASSICA NIGRA.

(*N. O.*—Cruciferae).

Sans.—Sarshapah. *Eng.*—Black mustard. *Hind*—Kalo-rai; Banarsi-rae; Makra-rai. *Pers.*—Sar-shaf. *Ben.*—Krishn-rai. *Tel.*—Avalu. *Tam.*—Kadugu. *Can.*—Karisasive. *Mal.*—Kaduka. *Mah.*—Mohori. *Bom.*—Rai-sarson. *Hind and Kumoan.*—Kalisarson. *Fr.*—Moutarde noire. *Ger.*—Scwarzary-senf.

Habitat.—Largely cultivated in India for the fixed oil which it yields.

Parts Used.—The seeds, oil and leaves.

Constituents.—The black, mustard contains Myrosin and Sinigrin (potassium myronate) 0.5 p.c., which acted upon by water form sulpho-cyanide of allyl, which is the volatile oil of mustard. It also contains fixed oil 25 p.c. sinapine sulpha-cyanide, lecithin, mucilage; proteids and

ash 4 p.c. The fixed oil obtained by expression contains glycerides of oleic, stearic and erucic or brassic acids. It is yellowish-green, non-drying, slightly odorous and of a bland mild taste. It solidifies on cooling.

Action.—Externally the oil is stimulant and mild counter-irritant. Internally the seeds are emetic. In moderate doses they are digestive and laxative. The leaves are pungent and stomachic.

Uses.—The powdered *seeds* combined with that of white mustard in the form of mustard flour is used as a simple vesicant and rubefacient. Mustard plasters are used in gout, sciatica, urticaria, etc. Mustard poultices are useful in febrile cases and in inflammatory swellings, such as parotitis. Mustard is largely used as a digestive condiment. The *leaves* of the mustard plant are used as a pot herb. The *expressed oil* is used as a diet; *externally* (locally) it is usefully applied in mild attacks of sore-throat, internal congestion and chronic muscular rheumatism.

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117. BRASSICA OLERECEA or B. Sativa & B. Botrytis or B. Florida

(*N. O.*—Cruciferæ.)

Eng.—Cabbage. *Hind. and Mah.*—Kobee. *Tel. and Can.*—Kosuguddae. *Tam.*—Kovippu (Cauliflower) *Hind.*—Phulkobee (Cauliflower.)

All the varieties of Cabbage, Cauliflower, Broccoli and Nolecole are produced from the wild cabbage —the Colewort which grows wild on hills. In India they grow abundantly in high places like Khandala, Mahableshvar etc. Cabbage contains a considerable amount of sulphur, hence its smell in cooking. The

juice of red cabbage (**B. Cumana or B. Rubbra**) made into a syrup is recommended for chronic coughs and in bronchitis and asthma. The juice of white cabbage is said to cure warts. In Ireland cabbage leaves are used for sore-throat being tied round it. Cabbage as well as cauliflower is mostly employed as culinary and dietetic article.

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118. BRYONIA EPIGŒA.

(*N. O.*—CUCURBITACEÆ.)

Sans.—Mahamula; Kadamba. *Eng.*—Bryoms. *Ben.* & *Hind.*—Rakas-gaddah. *Duk.*—Garajphal *Pers.*—Lufa. *Tel.*—Nagadonda; Akashagadda. *Tam.*—Akashakarudan. *Can.*—Akashgaruda-balli. *Mal.*—Kollan-kova-kizhauna. Nagadonda. *Guz.*—Kadavi-nai-no-kando.

Habitat.—A herbaceous climber met with in many parts of India from Punjab to Ceylon.

Parts Used.—The root.

Constituents.—A bitter glucoside "bryonin," starch, resin and mineral matters.

Action.—Alterative, tonic, anthelmintic, and laxative

Preparations.—Tincture, (1 in 10), dose:—10 to 30 minims; Powder, dose.—1 drachm; Paste and Infusion of root.

Uses.—This root is specially useful in syphilitic cases, old venereal complaints and also in the later stages of dysentery. It is usually administered in powder in one drachm doses. It is also an effective remedy for rheumatism and snake bites. For rheumatic complaints it is applied mixed with onion, cumin seeds and castor oil in the form of an embrocation or paste. Decoction of the of the powdered root has given benefit in cases of chronic mucous enterites.

Bryophyllum Calycinus.—See Kalanchoe Lanciniata.

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119. Buchanania Augustifolia is a species of Anacardiaceous Order, found in Bengal and known as *piyala*. Its fruits are edible.

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120. Buchanania Lancifolia is another species of the same Order found in the eastern coast of India. Its unripe fruit is eaten in curry.

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121. BUCHANANIA LATIFOLIA.

(*N. O.*—ANACARDIACEÆ.)

Sans.—Piyala; Chara; Chirika. *Hind.*—Piyar; Niye-veru Chironji (kernel). *Ben.*—Pial. *Punj.*—Chirauli. *Duk.*—(kernel) Charki-charoli. *Bom. and Guz.*—Charoli. *Tam.*—Katma, Mowda or Kati-mango. *Tel.*—Chara-mamidi. *Mah.*—Pyal-chari. *Burma.*—Lonephe, Limbo.

Habitat.—Throughout India & Burma, common in the hotter and drier parts.

Parts Used.—Fruit, seed, gum, roots, and leaves.

Constituents.—Albuminoids 28 p. c., mucilage 2·5 p. c, oil, fibre and ash which is 3.5 p. c. The edible seeds furnish "Cheroonjee" oil.

Action & Uses.—The *fruit* is said to be sweet and laxative. The seed is palatable and nutritious when roasted; used in medicine and considered heating. It yields a gum said to be useful in diarrhœa. The *gum* with goat's milk is given for intercostal pains. It is also used to flavor preserved preparations of milk such as *barfi*, *basundi*, *pheda*, *hulwa* of the white gourd, preserved cocoanut sweets as *Khobripak* in Bombay Presidency. The

kernel is employed as a tonic, sometimes substituted for the almond. The kernels pounded into an ointment are applied in skin diseases to cure itch etc., also to remove spots and blemishes from the face. The *oil* extracted from the kernels is used as a substitute for almond oil in medicine and confectionary. It is also applied to glandular swellings of the neck. The fruit is used by Hakims in tonic medicines and for applying to the tongue when inflamed or very hard. It is believed to cure pimples, prickly heat and itch. An emulsion is made of it, which contains almonds, dates without stones, seeds of cucumber and sesamum made into a paste in milk or water. Dose is 2 to 4 drachms. A powder made of the same ingredients, but without the use of milk or water, is prepared. It is given in doses of ½ to 2 drachms in milk to cure neuralgic headaches and fainting. A varnish is also made from the fruits.

Bursera Paniculata.—See Canarium Commune.

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122. BUTEA FRONDOSA.

(*N. O.*—Leguminosae.)

Sans, Hind, Kon, Mah & Tam.—Palash. *Ben.*— Palash ; (gum) Kamarkas. *Eng*:—Bastard Teak. (gum) Butea-gum. *Guz.*—Khakara. *Hind.*—Dhara ; (gum) Chuniagond. *Pers.*—Darakhate-palasha. *Tel.*—Paladulu.. Mooduga. *Tam.*—Murukkanmaram. *Can.*—Muttagamara, *Mal.*—Pilacham ; Murukka-maram. *Fr.*—Butee-feuillue.

Habitat.—Mountainous districts of India and Burma and common all over Bengal.

Parts Used.—The gum, seeds, flowers, bark and leaves.

Constituents.—The gum and bark contain kino-tannic and gallic acids, 50 per cent; soluble mucilage and ash 2 per cent; on dry distillation it yields pyro-catachin. The seeds contain fat 18 per cent., albuminoid substances 19 per cent. and glucose 6 per cent. The fat exists in the form of *moodooga* oil of the sp. gravity 0·917. The orange-red flowers yield a yellow dye.

Action.—The gum is astringent. The seeds are laxative and anthelmintic. The leaves are astringent tonic and aphrodisiac. The flowers are also aphrodisiac, depurative and diuretic.

Preparations.—Powder and Paste of seeds; Poultice.

Uses.—The *bark* furnishes a very important exudation which hardens into a red brittle-resin known as *butea-gum* or Bengal kino or *magugo* used in tanning. Medicinally it is an excellent astringent well adapted to children and delicate females, useful in diarrhoea and dysentery; the dose is from 5 to 30 grains; the addition of a few grains of cinnamon and a little opium (¼ to 1 grain) increases the efficacy. In large doses of 30 to 40 grains the sum is useful in cases of phthisis and hemorrhage from the stomach and bladder. The solution of the grain is applied to bruises and erysipelatous inflammations, ringworms etc., as an astringent application. The *juice* is also applied to ulcers and relaxed sore-throat; internally it is given in diarrhoea and dysentery. As anthelmintic the seeds are given in powder, 10 to 20 grains or as paste with honey added, thrice daily for three successive days, (especially for round worms) and followed on the 4th day by a dose of castor oil. For this the seeds are soaked in water, shells removed and kernel is powdered after being dried.

Externally the powder is a remedy for ringworm; it may be applied better in the form of a paste being pounded with lemon juice; also for herpes (Dhobis' itch). Externally the *leaves* are used to disperse boils, pimples, buboes, tumourous haemorrhoids, etc, and *internally* in flatulent colic, worms and piles. The *flowers* also are useful. Boiled in water and applied as poultice they disperse swellings and promote diuresis and menstrual flow; they are applied in orchitis. The water in which flowers are boiled is given internally with nitre added in cases of difficult micturition in ½ to 1 ounce doses. The *bark* is given with ginger in snake-bites. A weak decoction of the bark is useful in catarrh, cold and cough. The bark in pieces, mixed with sugar-candy and chewed relieves abnormal thirst. The gum combined with other astringents and rock-salt is recommended by Chakradatta, as an external application for pterygium and opacities of the cornea.

123. **Butea Parviflora** is a climbing shrub of the same Genus found throughout India, distinguished by its very small flowers and whose gummy exudation is used in colic and hysteria.

124. **Butea Superba** of the same Family known as *Lata Palasa* in Sanskrit and *Kimsuka* in Bengali and *Kesu* in Hindi, and *palas-wel* in Bombay, is a remedy for the poisonous bites of animals; its root is being used in combination with several other drugs; the flowers yield a yellowish dye. The *gum* of B. Superba 4 parts, mixed with 1, 2 and 3 parts respectively of red sandal-wood, rock-salt and chebulic myrobalans, and made into a powder, is recommended to be applied to pterygium and opacities of the cornea by ancient writers.

125 CADABA INDICA or C. Farinosa & C. Trifoliata.

Eng.—Indian Cadaba. *Tam.*—Velivi ; Viluttu ; Manthak-Kaoroonthu. *Tel.*—Ada morinika ; Chekoradi ; Chimurudu. *Arab.*—Asal ; Sarah.

Habitat.—Western India, Carnatik and Ceylon.

Parts Used.—Leaves and flower-buds.

Constituents.—Leaves contain a bitter alkaloid soluble in ether and alcohol ; and two organic acids (one resembling cathartic acid) ; also nitrates and carbonates of lime. The ash contains alkaline chlorides, sulphates and carbonates.

Action.—Stimulant, antiscorbutic and aperient ; also emmenagogue and antiphlogistic.

Preparations.—Decoction, Poultice and Oil.

Uses.—*Decoction of the leaves* (1 in 10) in doses of 2 to 4 ounces is given as anthelmintic for round worms. The *juice of C. Trifoliata* is given in dyspepsia in children. A decoction of the leaves combined with castor oil and turmeric is found useful in amenorrhoea and dysmenorrhoea. With myrobalans and ginger or with senna and epsom-salts, it is given as purgative and antiphlogistic in syphilis, scrofula and rheumatism. *Externally* the leaves are used with the leaves of Odina Wodier (*Ajashringi*) to relieve rheumatic pains and as *poultice* to boils to promote suppuration. The leaves are used in preparing *medicated oils.*

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126. CAESALPINIA BONDUC.

(*N. O.*—LEGUMINOSÆ.)

Sans.—Latakaranja ; Putikaranja ; Kubherakshi. *Eng.*—Molucca Bean; Bonduc seed; Physic nut; Fever nut. *Hind.*—

Sagar-ghota; Kalkaranj; Katkaliji. *Ben.*—Dahara; Nata-karanja; Natar-phal. *Duk.*—Gutchha. *Tel.*—Gatchkaya; Yalakhi. *Tam.*—Kalarkodi; Mulal; Kalangu. *Can.*—Gajikc-kayi. *Mal.*—Kalanchikuru. *Kon.* & *Mah.*—Gajago. *Guz.*—Kakachia; Gajga. *Fr.*—Bonduc jaune; Guilandina bonduc.

Habitat.—A climbing shrub common throughout India.

Parts Used.—The seeds or nuts, root, bark and leaves.

Constituents.—The seeds yield a non-alkaloidal, bitter principle soluble in alcohol and chloroform and called *Natin* but the active principle is said to occur more in the bark of the root. The seeds also contain an oil.

Action.—The nuts and the root-bark are antiperiodic, antispasmodic, bitter-tonic, anthelmintic and febrifuge. The powdered seed acts as tonic. The leaves are considered deobstruent and emmenagogue. The root is a gastric tonic.

Preparations.—Powder, oil and ointment.

Uses.—The *seeds* or *nuts* and the *root-bark* are valuable in simple, continued and intermittant fevers, in asthma, colic, etc. Dose is 10 to 30 grains of the powdered seed or kernel with an equal quantity of powdered black pepper; of the root-bark the dose is 10 to 15 grains. The *powdered seed* smoked in a *hucca* is said to cure colic; mixed with warm butter-milk and asafoetida it acts as tonic in dyspepsia. The *burnt seeds* with alum and burnt arecanut is a good dentifrice useful in spongy gums, gum boils etc. A *cake* made of 30 grains of powdered kernel, the contents of an egg and fried in ghee is said to be a valuable remedy taken twice a day in cases of acute orchitis, ovaritis and scrofula. The *ointment* made from the seeds with castor

oil forms an excellent application to hydrocele, acute orchitis and glandular swellings. The *tender leaves* are efficacious in disorders of the liver and the *oil* expressed from them is useful in convulsions, palsy and similar nervous complaints. The tender leaves boiled with castor oil or ghee and thickly applied on painful and swollen testicles are found to be very efficacious. The oil expressed from the seeds is a remedy in discharges from the ear; it is also used as an embrocation in rheumatism; the seeds are roasted and powdered and given internally in hydrocele and leprosy also.

Cæsalpinia Bonducella is an allied species resembling C. Bonduc. Medicinally both the species are used for the same purpose.

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127. CAESALPINIA DEDYNA or C. Oleosperma.

(*N. O.*—LEGUMINOSÆ.)

Hind.—Vakeri-mul. *Ben.*—Umul-koochi. *Tel.*—Nooniglika. *Bom.*—Vakeriche-bhat

Habitat.—Eastern & Western Peninsula, Assam Bengal, Chittagong, Burma, Eastern Himalayas & Ceylon,

Parts Used.—The roots.

Constituents.—The pod-cases have been found to contain all the tannin which the drug is said to possess.

Action & Uses.—The root in powder is given internally in doses of 1½ drachms, mixed with milk, ghee cumin and sugar in phthisis and scrofula; the powder is useful as astringent in diarrhoea and other chronic fluxes. When sores exist it is applied externally as well. A kind of tuberous swelling which is found on the root is

preferred. In some parts of Burma the root pounded and mixed with water is drunk as a febrifuge and is said to have an intoxicating effect.

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128. CAESALPINIA SAPPAN.

(*N. O.*—LEGUMINOSÆ).

Sans.—Ruktamukta, Patanga. *Eng.*—Sappan wood; Brasiletto. *Pers Ben. Arab, & Bom.*—Bakam. *Hind, Duk, Guz, & Mah.*—Patang. *Tel.*—Bukkapuchettu, Bakaruchakka *Tam.*—Parthangi, Vetteku. *Can.*—Sappanga. *Mal.*—Chappanam.

Habitat.—A small thorny tree found throughout the Eastern & Western Peninsula.

Parts Used.—The wood.

Constituents.—Red coloring matter—sappan red, gallic and tannic acids. Sappan-red resembles haematoxylin and is soluble in ether, alcohol and water; contains carbon 67·11 p.c., hydrogen 5 43 p. c. and oxygen 27·46 p. c. The active principle resembles haematin and is said to be identical with brasilin. The resinous extract of Sappan contains a crystalline principle which, if distilled and fused with potash yields resorcin.

Action.—The wood is a powerful astringent.

Preparations.—Decoction or Infusion and Paste.

Uses.—Medicinally the wood is recommended as a substitute for logwood. It is used in infusion or decoction as an emmenagogue and also in atonic diarrhoea, dysentery, etc; also employed in some forms of skin disease, especially lichen, in the form of paste. *Gulal* which is made of arrowroot and the red coloring matter of Sappan wood is used in Otorrhoea by being blown into the ear.

129. CAJANUS INDICUS & C. Bichlor & C. Flavus.

(*N. O.*—LEGUMINOSAE).

Sans.—Tuberika ; Adhaki, Tuvari. Soopyah. *Eng.*—; Pigeon Pea, Dal. Cadjan Pea, Congo Pea. *Hind.*—Tor Arhar dal. *Ben.*—Arhar *Guz.*—Tuvare. Dangri. *Mah.* & *Kon.* Tori. *Tel.*—Kandulu. *Tam.*—Adagi. Tuvarai. *Can.*—Togari. *Mal.*—Adhaki : Tuvara, Catjan.

Habitat.—Extensively cultivated throughout India as an article of food.

Parts Used.—The seeds or beans and leaves.

Constituents.—This pulse which has three varieties *viz.*, yellow, red and white, contains food elements :—nitrogenous matter, oil or fatty matter starch or carbo-hydrates, nutritive salts and watery matter.

Action.—The pulse is nutritive. Of the 3 varieties :—C. Flavus (pigeon-pea) is the best.

Uses—This *pulse* is easily digested and therefore suitable for invalids ; but it is regarded as hot and dry as it produces costiveness. It is largely used in preparing a *soup* widely appreciated by classes. The *leaves* are used in diseases of the mouth. The pulse and leaves ground into a *paste*, warmed and applied over the mamma has the effect of checking the secretion of milk. The tender leaves are chewed in cases of aphthæ and spongy gums. The *expressed juice* of the leaves is given with a little salt in jaundice. A *poultice* made with the seeds will reduce swelling.

Calamus Aromaticus Asiaticus.—See Acorus Calamus.

130. Calamus Extensus & Calamus Rotung are two climbing plants of the Genus, Aroideæ met with

the former in Sylhet and the latter in tropical India, especially Bengal. The latter is known in Bengal as *Beta* (*Sans.*—Vetasa; *Mah.*—Berisu; *Tel.*—Jatayurkuli; *Can.*—Betasu). The young shoots of this plant are eaten as a bitter tonic vegetable and the pulp of the ripe fruit surrounding the seeds is an astringent.

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131. CALLICARPA LANATA or C. Wallichiana, or C. Cana or C. Tomentosa or C. Americana.

(*N. O.*—VERBENACEÆ.)

Ben.—Masandari; Muttura. *Hind.*—Bastra. *Mal.*—Tondi; Teregam. *Mah.*—Pondi; Karavati; Isvar. *Tam.*—Katkomal.

Habitat—Deccan and Ceylon.

Parts Used.—The root, bark and leaves.

Preparations.—Decoction of the root and bark (1 in 20), dose:—1 to 2 drachms.

Action.—Refrigerent, hepatic stimulant, demulcent and emollient.

Uses.—The decoction of the root is given in cases of fever and also to remove hepatic obstruction; it is also given in skin diseases. It is also used as a wash for aphthæ in the mouth.

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132. CALOPHYLLUM APETALUM and C. Inophyllum.

(*N. O.*—GUTTIFERÆ).

Sans.—Punnagam, Namaeruak, Panchakaeshera. *Eng.*—Alexandrian Laurel; Pannay Tree. *Hind.*—Undi, Surpan, Sultan Champa. *Duk.*—Oondi. *Mah.*—Undag, Pumag.

Tel.—Pumagamu, Ponnavittulu. *Tam.*—Punnagum, Punnai-virai. *Can.*— Surahonnae, Namaeru *Mal.*—Cherupuna. Ponnakum. *Kon.*—Undee-phal.

Habitat.—Near the sea coast throughout India.

Parts Used.—The bark, the seeds and leaves; the bitter oil from the seeds and resin or gum.

Constituents.—A resin of parsley odor and oil. The resin resembles myrrh and is soluble in alcohol.

Action.—The bark is astringent; its juice is purgative. The oil is rubefacient and irritant; but on the mucous membrane of the genito-urinary organs it is said to be a specific. Its use is only external. The gum is emetic and purgative.

Preparations.—Liniment and paste. The paste is made by mixing together pounded seeds of *undi*, seeds of cachew nut, borax and gamboge.

Uses.—The oil expressed from the seeds (60 per cent) and known in Europe as the Domba oil, is a highly esteemed external application in rheumatism; also in gonorrhœa and gleet; It is also applied to scabies (itch). The *gum* exuding from the wounded bark is a remedy for wounds and ulcers. The *bark* is used in *decoction* in internal hæmorrhages. The *leaves* soaked in water are applied to inflamed eyes. The gum mixed with strips of the bark and leaves is steeped in water and the oil which rises to the surface is an application to sore eyes. The oil expressed from the seeds is generally used in India as lamp oil.

133. Calophyllum Wightianum or C. Decifient is another species of the same Genus known as *Sarapuna* or *Cherupinnay* and met with on the Western Ghats from

Konkan to Travancore. The action and uses of this plant and its various parts and products are similar to those of the above species.

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134. CALOTROPIS GIGENTA and C. Procera.

(*N. O.*—ASCLEPIADEÆ.)

Sans.—Arka; Alark; Mandarah. *Eng.*—Gigantic Swallowwort; Mudar. *Hind.*—Madar. *Ben.*—Akanda. *Pers.*—Khark. *Guz.*—Akado. *Mah.*—Ruvi; Akda. *Tel.*—Ekke; Jilledu; Arkamu. *Tam.*—Badabadam; Erukku. *Can.*—Ekkemale. *Mal.*—Erikka. *Sind.*—Byclospa.

Habitat.—These shrubs are found chiefly in waste lands, the first variety in Lower Bengal and South India and the second in Upper Bengal and North India.

Parts Used.—The root-bark, leaves, juice and flowers.

Constituents.—The various principles of the calotropis bark are.—Madar albun, Madar fluavil, black acid resin, Caoutchouc (free), yellow bitter resin (active principle). The sap of the madar plant contains in addition to Caoutchouc two principles analogous to the alban and fluavil of guttapercha. Therefore Madar guttapercha is recommended as a substitute for the Commercial article. Quantitative experiments by Drs. Hill and Sarkar have shown that the root-bark from the older plants has a higher percentage of acrid and bitter resinous matters than that from the younger plants. Therefore the older the plant the more active is its bark in its effects.

Action.—This drug is acting like digitalis on the heart. The physiologically active substance is found in the milky juice of the plant. The root-bark is alterative, tonic, antispasmodic, expectorant, and in large doses emetic; as alterative 3 to 10 grains and as emetic 30 to 60

grains. This drug increases secretions especially the evacuation of bile and has a sedative action on the muscular fibres of the intestines, especially the colon and the rectum allaying all pain, tenesmus and irritation and thus relieving all dysenteric symptoms. In syphilitic affections it is regarded as a great remedy so much so that it is called "vegetable mercury". In intermittent fevers it is used as antiperiodic and diaphoretic as it relieves the hot stage of fever by producing perspiration. The flowers are digestive, tonic and stomachic in action. The juice is a violent gastro-intestinal irritant. It is used for criminal purposes.—for producing abortion or causing the death of new-born infants.

Preparations.—Paste or emulsion ; Pills and powder of the root and leaves. Ash and fluid Extract of the leaves and Oil.

Uses.—The *root-bark* and *inspissated juice* are used medicinally. The drug is used in leprosy, constitutional syphilis, mercurial cachexia, syphilitic and idiopathic ulcerations, dysentery, diarrhoea and chronic rheumatism. The root-bark is useful in skin diseases, elephantiasis, enlargement of the abdominal viscera, ascites and anasarca. Reduced to a paste with sour conjee it is applied to elephantiasis of the legs and scrotum. The milky juice is recommended for ringworm of the scalp for sinuses and anal fistula and to destroy piles; mixed with honey it is used in aphthæ of the mouth and with a piece of cotton wool it is inserted into hollow tooth to cure tooth-ache. The dried juice is insoluble in water; it may be administered in the form of pills. For medicinal purposes the root-bark should be selected from plants as old as possible, in the

hot or dry weather and the bark should not be removed as soon as the root is dug out, but 24 hours afterwards; the thick, rough, corky epidermis of the bark should be scraped off before the root-bark is reduced to powder. This powder is a substitute for ipecacunha in dysentery; in doses of 5 to 10 grains it may be safely substituted for ipecac, though double that quantity is generally required; with opium it forms a good representative of the officinal Dover's powder; in chronic rheumatism it is given suspended in mucilage and water; with black pepper twice a day in jaundice; given in half a seer of whey of milk with half a drachm of sodium carbonate jaundice is said to be cured within a week. The powdered root-bark is smoked like tobacco in syphilis. The leaves of the plant are also useful in ascites and enlargement of the abdominal viscera; they are mixed with rock-salt, roasted in closed vessels and the ash thus produced is given with whey. A fluid extract of the leaves given in doses of 1 to 5 drops in intermittent fever during intermission is said to cut off the paroxysm more effectually than quinine. A powder of the dried leaves is dusted on ulcers to promote healthy action or mixed and boiled with sweet oil and turmeric added it is applied to eczema and other skin eruptions and to old sores and ulcers and to paralized parts. This drug is employed to cure all kinds of fits, epilepsy, hysteria, lock-jaw, convulsions in children, paralytic complaints, cold sweats, poisonous bites and venereal complaints. The flowers are used in cough, catarrh, asthma and loss of appetite. The dried flowers in 1 to 2 grain doses with sugar are given in leprosy, secondary syphilis and gonorrhoea with milk diet.

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135. CALYCOPTERUS FLORIBUNDA.

(*N. O.*—COMBRETACEÆ)

Hind.—Kokoranj. *Mah.*—Baguli; Ukshi. *Tel.*—Bandimarudu. *Can.*—Marsada; Baguli.

Habitat.—West India; Assam.

Parts Used.—The leaves, root and fruit.

Constituents.—Tannin 6·86 p.c.

Action.—Stimulant and astringent. The leaves are bitter and astringent. The fruit is carminative

Preparations.—Infusion of leaves (1 in 20) dose:—2 to 8 drachms; Juice of leaves. Paste of the root.

Uses.—The juice of the leaves is chewed or infusion of leaves is given in colic and dyspepsia. The root ground to paste with that of Croton Oblongifolium is applied to bites of *Phoorsa* snake (Echis Carinata). The fruit along with other carminatives (spices) in equal parts is used as a compound powder and given in doses of 30 grains in jaundice. The fruit with the root of Grewia Pilosa is rubbed into a paste with honey and applied to ulcers.

Calysaccion Longifolium—See Mesua Ferrea.

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136. CAMELLIA THEIFERA or Camellia Thea.

(*N. O.*—TERNSTRÆMIACEÆ).

Eng.—Tea plant. *Ver.*—Chha; Chai.

Habitat.—This plant which is a native of China is grown in the hill districts of India. There are two varieties:—the green and the black tea; those that are quickly dried and fired are the green teas, and those allowed to ferment a few hours before being dried and fired are the black variety.

Parts Used.—The leaves and the alkaloid.

Constituents.—The tea contains a volatile oil, tannic and gallic acids, quercetin, "*theine*" its chief alkaloid (identical with caffeine), ranging from 3·22 to 4·66 p c., xanthine, adenine, and theophylline similar in character to theobromine. The volatile oil is most abundant in green tea, which is therefore more powerfully stimulant.

Action.—Stimulant and astringent. In moderate quantities it stimulates the mental faculties, clears the mind and facilitates its working. In some it prevents sleep and causes mental irritability. At times however, the disorder of the mental faculties under the influence of of strong tea, amounts nearly to insanity. In some it is highly stimulating and exhilarating; in others its effects are depression and lowness of spirits. Like all other stimulants it requires to be taken with due caution. Very strong tea, like alcoholic drink is mischievous, although not in such a high degree as spirits, beer etc. *Theine* diminishes the waste of the body *i.e.*, carbonic acid, ureas uric acid and waters; it increases the assimilation of nitrogenous and hydrocarbon foods. When indulged in to excess it affects the heart, vasomotor centre and motor nerves and also the stomach, giving rise to nausea, vomiting, flatulent dyspepsia, tremulousness of the limbs, pallor of form, feeble pulse, supraorbital headache, hallucinations and nightmare.

Uses.—An infusion of tea leaves was once used as a remedy for insect blights. The leaves contain about 30 per cent. of fixed oil somewhat resembling olive oil. Tea is seldom used medicinally except as a stimulant in strong infusion or as an astringent lotion on account of the

tannin it contains, and which it renders useful as a gargle or injection. *Theine* is a nervine stimulant and beneficial in headache, neuralgia and nervous depression. A regular and moderate use of tea is beneficial, supplying the necessary stimulus to the flagging powers and reviving and refreshing all the mental powers. But then this, be it remembered, is its moderate use, not its immoderate abuse.

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137. CAMPHORA OFFICINARUM.

(*N. O.*—LAURACEAE).

Sans. & Can.—Karpoora. *Eng.*—Camphor. *Hind Duk, Ben., Guz., & Mah.*—Kapur. *Tel., Tam. & Mal.*—Karpooram. *Burm.*—Payo; Paronk. *Cing.*—Karpura *Bom.*—Bhimseni Kapur. *Fr.*—Camphre. *Ger.*—Kampher. *Pers.*—Kafur.

Habitat.—Found in Indian Bazaars; it is generally imported from China and Japan.

Parts Used.—The concrete volatile oil *i. e.* camphor (stearoptene) obtained by distillation with water of the wood of the trees or plants Cinnamomum Camphora of Formosa and S. China or Dipterocarpus Camphora of Borneo and Sumatra, and purified by sublimation. It occurs in translucent white crystals.

There are three varieties, *viz*—(1) Formosa camphor. (2) Borneo or Barus camphor, known in India as *Bhimseni kapur*, and (3) Blumea or Ngai camphor. The second variety is highly prized in India and is sold at a very high price. It is naturally formed in the stems of Dryobalanops camphora, grown in Dutch Sumatra and sinks in water.

Constituents.—Camphor treated with chloride of zinc and distilled is converted into *Cymene* or *Cymol* a substance contained in many essential oils. When treated with nitric acid it becomes oxidised and forms *camphoric acid*, which is a crystalline body, odourless and of an acid taste, soluble in alcohol, ether and fatty oils, in boiling water (1 in 10), and in cold water (1 in 100); insoluble in carbon sulphide.

Action.—Diaphoretic, stimulant, antiseptic, antispasmodic, expectorant, sedative, temporary aphrodisiac, narcotic and externally anodyne.

Preparations.—Pill, powder, emulsion, tincture, spirits, liniment and water or mixture.

Properties & Uses.—Camphor is of a very peculiar, fragrant and penetrating odour, bitter, pungent and aromatic taste. It is extremely volatile and inflammable burning with a bright light and much smoke. It is good in typhus, confluent small-pox and all fevers and eruptions of the typhoid class; also in measles, febrile delirium, whooping cough, hiccup, spasmodic asthma, hysteria, nymphomania, dysmenorrhoea puerperal mania, chorea, epilepsy, atonic gout, melancholia, acute rheumatism, chronic bronchitis etc. It is stimulant in prostration of fevers, sedative in delirium tremens and chordee. It exhilarates in moderate doses and raises the pulse without producing febrile symptoms; it also promotes perspiration and in certain states of the body it induces sleep when opium fails to do so; but its effects are transient and therefore it requires frequent administration. It is given in doses of 3 to 10 grains in *pills, powder* and in *emulsion*. Sniffed up the nostrils it relieves cold in the head; the

vapours inhaled by means of a tube like a cigar are useful in affections of the chest; a piece held in the mouth is said to be a protective against fevers and other infectious diseases; finally its strong odour protects animal substances from the ravages of insects. In large doses camphor is an antiaphrodisiac. In cases of spermatorrhoea, chordee, pruritus, chronic rheumatism &c., *pills of camphor and opium* in the proportion of 3 grains of the former to half-grain of the latter taken at bed time are found to be very efficacious. In uterine pains 6 to 8 grain pills are administered and the *liniment* of camphor is rubbed on the abdomen. In apoplexy fomentations of hot water with liniment of camphor added are applied to feet and calfs of legs with much benefit; so also in cases of delirium. An ounce of camphor liniment added to 15 ounces of conjee water will make an injection useful in round worms and in cases of apoplexy, convulsions (puerperal), hysteria and similar other affections. Three or four grains of camphor with an equal quantity of asafœtida and made into a pill and administered in asthma, insomnia and delirium has been found to give much relief. In pruritus and eczema of genitals camphor ointment (1 in 16 of boracic ointment) is a very useful application. Its chief *officinal preparations* are.—(1) *Camphor mixture* made by simply immersing in cold water a lump of camphor tied in muslin for a few hours (half ounce of camphor to one gallon of water). Dose is 1 to 2 ounces. (2) *Compound tincture of camphor* known as Paregoric Elixir. Dose --15 to 60 minims. (3) *Camphor liniments*, simple and compound, prepared by dissolving camphor in olive oil or rectified spirit and which are used externally as stimulants and counter-irritants, especially in rheumatic pains of joints

and muscles. (4) *Spirits of camphor* prepared by dissolving 1 ounce of camphor in 9 ounces of rectified spirit. Dose is 10 to 30 minims in emulsion. Camphor taken in excess acts as an irritant narcotic poison producing epigastric pain, nausea, vomiting, maniacal delirium and convulsions.

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138. CANARIUM COMMUNE.

(*N. O.*—AMYRIDACEAE & SIMARUBACEÆ).

Eng.—Java almond tree. *East Indian.*—Elemi. *Hind., Cutch & Ben*—Jangli badam. *Can.*—Kagglimara; sambrani; *Java.*—badamee. *Mal.*—Kanari.

Habitat.—This plant of the Malay Archipelago has been cultivated in Southern India.

Parts Used.—The nuts or seeds and oil; the concrete oleo-resin which exudes by excision :—*elemi.*

Constituents.—Brein 60 p. c. and amyrin (resin) 25 p. c. bryoidin, breidin and elemic acid.

Action.—Demulcent, stimulant and expectorant. The gum is stimulant and rubefacient. The oil is demulcent.

Preparations.—Ointment (1 in 5); emulsion of nuts or seeds and oil; dose of the emulsion.—½ to 1 ounce.

Properties & Uses.—The *resin* "Manilla Elemi," a product of this plant is used principally in the manufacture of varnishes; the *gum* is used as an ointment for indolent and sluggish ulcers. The nut yields a *semi-liquid oil* on expression. It is used for culinary purposes and is regarded as palatable and demulcent as almond oil, useful in gleet, gonorrhœa &c The bark of the tree yields an abundance of *limpid oil* with a pungent turpentine smell congealing to a buttery camphoraceous

mass ; it is stated to possess the same properties as copaiba applied in the form of an ointment to indolent ulcers. The kernels in emulsion form a substitute for almond mixture.

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139. CANARIUM STRICTUM.

(*N. O.*—Boswellia)

Eng.—Black damer. *Ben. Duk, Hind, & Guz.*—Kala damer. *Tam.*—Karappu damar *Mal.*—Canari-telli mara. *Can.*—Mandadhup ; raldhup. *Tel.*—Nalla-rojen.

Habitat.—Western Peninsula, Tinnevelly, Malabar, Bababudan hills.

Parts Used.—The resin obtained from the tree.

Constituents.—A volatile oil and resin.

Action.—The resin is stimulant to the skin.

Uses.—The *resin* is used as plaster and ointment, and as a substitute for Burgandy pitch in making plasters etc. It is useful as an ointment in chronic skin diseases such as psoriasis, pityriasis etc. It is also employed with gingelly oil in rheumatic pains.

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140. CANAVALLIA ENSIFORMIS.

Sans.—Maha-shibee. *Hind.*—Goyijiyashivalam ; sweetasima. *Arab.*—Galaphul ; Gol. *Tel.*—Karoochikadu. *Mah.*—Abayee ; Pathave

Habitat.—Many parts of India. There are two varieties:—the white and the red.

Parts Used.—The root and the fruit.

Action.—Cool, demulcent, antibilious and cordial.

Properties and Uses.—The fruits which are about a foot in length and curved like a cutlass (sickle) are used in curries, chetneys and pickles. When they are tender

and fresh they may be eaten, but in very small quantity. The root ground into paste with cow's urine and administered internally for consecutive days is said to cure enlargement of liver.

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141. CANNA INDICA or C, Orientalis.

(*N. O.*—MARANTACEAE).

Sans.—Kamakshee; Sarvajaya. *Ben.*—Sarvajaya *Eng.*—Indian bread-shot. *Duk.*—Akalbarki. *Hind.*—Sabjaya. *Mah.*—Devakali. *Tel.*—Krishnatamara. *Tam*—.Poovalai, Kandamanu. *Can.*—Kaelahoo; Sugandhraju. *Mal.*—Katuvara. *Kon.*—Kaelaphool.

Habitat.—Several varieties are common all over India grown in gardens.

Parts Used.—The rhizome and fruit.

Constituents.—Fat, traces of an alkaloid, gum and starch.

Action.—The root is diuretic, diaphoretic and demulcent. The seed is cordial and vulnerary.

Preparation.—Decoction (1 in 20), dose:—1-2 ounces.

Uses:—*The root in decoction* is used in fevers and dropsy. It is also given in dyspepsia. The *seed-juice* warmed and instilled into ears as ear-drops is said to relieve earaches. When cattle have eaten any poisonous grass which is generally discovered by the swelling of the abdomen the root-bulb of this plant is administered as a remedy; The root-bulb is broken up in small pieces boiled in rice-water together with pepper and given to the cattle suffering from poisonous symptoms to drink.

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142. CANABIS SATIVA or C. Indica.

(*N. O.*—CANNABINACEAE.)

Sans.—Vijaya. Siddhapatri. *Eng.*—Indian Hemp. *Hind* Ganja. *Ben.*—Bhang ; Sidhi. Ganja. *Arab.*—Kinnab. *Pers.*—Daarakte-bang. *Guz.*—Ganja. *Mah.*—Bhanga *Tel.*—Ganjayi Jadaganja. *Tam.*—Pangi : Kanja : madamattagam. *Can. and Kon.*—Bhangi. *Burm.*—Segiyav. *Cing.*—Kansa. *Mal.*—Kancha.

Habitat.—This pistillate plant is a native of Western and Central Asia, now largely cultivated all over India and is found wild on the Western Himalayas and Kashmir and is acclimatised on the plains of India generally.

Parts Used.—The dried flowering or fruiting tops ; The leaves seeds and resinous exudation of the 3 varieties of *Ganja.*—flat, round and powdered (*Chur*) ; the last is the best for medical use.

Constituents.—A volatile oil composed of Cannabene, Cannabene hydride, several alkaloids (Cannabinine, tatano-cannabinine etc.). Canabinon and Cannabin ; a resin which consists of Cannabinol and several terpenes. Hemp seeds yield from 25 to 30 p.c. of a greenish yellow oil becoming brownish yellow on keeping. The essential oil purified by distillation in a current of steam and extraction with ether is a mobile liquid boiling at 248 to 268 degrees. *Charas* the cannabis resin extracted from the leaves contains no chlorophyl. On analysis it was found to contain 33 p. c, of an oil. The ethereal extract from *Charas*, has yielded:—(1) a terpene boiling at 160—180 degrees, yield 1·5 per cent. (2) a sesqui-terpene boiling at 258—259 degrees, yield 2 per cent. (3) a paraffin, melting point 63·64

degrees, yield 0-15 per cent. (4) a toxic red oil boiling at 265 degrees, yield:—33 per cent., of the *Charas* taken.

Action.—All parts of the plant are intoxicating, stimulant, aphrodisiac and sedative. In moderate doses the plant is at first exhilarant and powerful aphrodisiac; after a while it is sedative. Its habit leads to indigestion, body-waste, melancholia and impotence. In large doses it first produces mental exaltation, intoxication, a sense of double consciousness and finally loss of memory, glomi ness, etc.

Cannabinine is a powerful sedative. Dose:—1 to 4 grains. Cannabinon is also sedative in action, dose:—½ to 1 grain. Tanato-Cannabinine is a brownish powder, anodyne and hypnotic in action. Dose:—4 to 8 grains. *Charas* the resin is narcotic anodyne and also aphrodisiac. Dose:—¼ to 2 grains. On the whole Indian hemp is feebly anodyne, strong exhilarant, dilirient and hypnotic; anti-spasmodic on muscles, aphrodisiac on genital organs and diuretic on kidneys. The leaf juice is diuretic.

Cannabinol is a toxic red oil, a constituent of Cannabinon, *charas*, *ganja* and *hashish*. The leaves of Cannabis Sativa are regarded as heating, digestive, astringent and narcotic. Indian hemp is primarily stimulant, secondarilly anodyne, antispasmodic and anaesthetic. *Charas*, the Cannabis resin is narcotic, without causing nausea, constipation or headache as opium does.

Preparations.—*Sabjee*, *Majoom* (Confection), Paste, Powder, Tincture, Poultice and Oil. The hemp plant is cultivated in India for the various forms of narcotics which it yields and which have been used so largely by Indians from very ancient times. The three principal forms

in which the Cannabis Sativa is used in India are:—(1) The *Ganja* consisting of the unfertilized resinous brownish-green flowering shoots of the female plant grown on the plains; the narcotic principle which is only developed in the *Ganja* in the unfertilized flowers entirely disappears after fertilization has taken place. On the other hand the plant grown on the lower hills of Punjab and which yields (2) *Bhang* which is of deep green colour, does not develop the narcotic property until the fruits are mature, the dried broken leaves and fruiting shoots constituting the *Bhang* or *Siddhi* so largely used by Indians in making the intoxicating liquor *Hashish* or the narcotic conserve or confection called *Majoom*. (3) The *Charas* is of the dark-green or brown color; it is the cannabis resin which exudes naturally on the leaves, stems and fruits, but only on plants growing on the mountain tracts at an altitude of 6000 to 8000 feet. It is powerfully narcotic and is smoked with tobacco. *Ganja* contains about 20 per cent., *Bhang* 10 per cent., and *Charas* 40 per cent., of resin.

Siddhi, *Subjie* and *Bhang* are synonymous with each other and are used with water as a drink which is thus prepared:—About three tolas weight are well washed with cold water, then rubbed to powder, mixed with equal parts of black pepper, dried rose-petals, *Khuskhus* (poppyseeds), almonds, cardamoms, cucumber and melon seeds to which sugar, half a pint of milk and equal quantity of water are added. This is considered sufficient to intoxicate an habituated person. Quarter to half the quantity is enough for a novice. The intoxication caused by this beverage causes the person to sing and dance, to eat food with great relish and to seek aphrodisiac enjoy-

ments. The intoxication lasts about 3 hours when sleep supervenes. No nausea or sickness of stomach follows, nor are the bowels at all affected; next day there is slight giddiness and vascularity of the eyes, but no other symptom worth recording.

Ganja is used for smoking alone.—One rupee weight and a little dried tobacco are rubbed together in the palm of the hand with a few drops of water. A little tobacco is placed in the pipe, then a layer of the prepared *ganja*, then more tobacco and above all the fire. Four or five persons usually join in the use of this. The *hookah* is passed round and each person takes a single draught. Intoxication ensues almost instantly and within half an hour to the novice and after four or five inspirations to those that are accustomed to it. The effects differ from those occasioned by *siddhi*. Heaviness, laziness and agreeable reveries ensue, but the person can be readily roused and made to discharge his routine duties.

The *Majoom* or hemp confection made in ghee and with the addition of water contains *bhang*, *ganja*, *charas*, opium, poppy-seeds, *dhatura* leaves and seeds, cloves, mastich, aniseeds, cumin, sugar, butter, flour, milk, cardamoms and *tabashir*. Dose:—$\frac{1}{2}$ to 1 drachm. One drachm by weight will intoxicate a beginner; three drachms will be required to one that is accustomed to its use. The taste is sweet and the odour very agreeable. Sometimes, if the customers require, stramonium seeds are introduced, but never nux vomica. It is most fascinating in its effects, producing ecstatic happiness, a feeling of high rank, a sensation of flying, voracious appetite and intense aphrodisiac desire.

Paste consists of equal parts of *Bhang*, *Ganja* and pepper made into a paste with water.

The leaves of Cannabis Sativa are purified by being boiled in milk before use. The intoxication produced by *bhang* is said to be of a pleasant description and to promote talkativeness.

Bhang and *Ganja* are prescribed by Hakims and Viadyans in bowel complaints and recommended as appetisers, as nervous stimulants and as a source of great staying-power under severe exertion or fatigue. The *leaves* make a good *snuff* for deterging the brain; their *juice* applied to the head removes dandruff and vermin ; dropped into the ear it allays pain and destroys worms : it checks the discharge in diarrhoea and gonorrhoea. The *powder of the leaves* applied to fresh wounds promotes granulation ; a *poultice* of the plant is applied to local inflammations, erysipelas, neuralgia, haemorrhoids etc., as an anodyne or sedative. The dose of the leaves is 40 grains internally. Externally, a poultice of the fresh bruised leaves is useful in affections of the eye with photophobia ; also applied to relieve pain and swelling in orchitis. The *resin* extracted from the leaves and flowers and known as *nasha* or *charas* is used to produce sleep in cases of sleeplessness, in which opium is contra-indicated ; it is valuable in preventing and curing sick-headaches, malarial and periodical headaches, valuable in acute mania, whooping cough, asthma, dysuria and in relieving pain in dysmenorrhœa and menorrhagia and pain of the last stages of phthisis ; it increases appetite. It does not produce loss of appetite or constipation like opium. For asthma and tetanus the dose of the extract is

from $\frac{1}{4}$ to 2 grains ; the leaves powdered, mixed with sugar and well fried in ghee and with black pepper added are administered in chronic diarrhoea; with poppy seeds the extract is given in dysentery ; with asafoetida it is given in hysteria. In cases of chronic colic wonderful effect is produced by the administration of 1 grain of the extract in combination with $\frac{1}{4}$ grain of ipecacuanha. In dysentery about half a drachm of dried tender leaves mixed with a little sugar and black pepper powder is a well-known and successful remedy ; the *tincture* of the British Pharmacopoea is also used in 15 to 20 minim doses three times a day especially in acute dysentery ; combined with belladonna it is given in whooping cough, infantile convulsions, hepatic and renal colic in tetanus and in hydrophobia. The *oil* extracted from the seede is used for rubbing in rheumatism. *Paste* applied to the head relieves dandruff and vermin.

Numerous confections of *bhang* are described in books. They are as their names imply, considered aphrodisiac and are used in chronic bowel complaints and nervous debility. Most of them are prepared with equal parts of a number of supposed tonic and aphrodisiac substances in small quantities and *bhang* equal in weight to all the other ingredients together with sugar, honey and the usual aromatics. *Majoom* would be a neater substitute for these complicated preparations.

143. CANSCORA DECUSSATA.

(*N. O.*—GENTIANACEÆ).

Sans.—Kambumalinee. *Sans, Mah. and Kan.*—Shankhapushpi. *Hind. and Mah.*—Sankhahuli. *Ben.*—Dankuni. *Mal.*—Causjan-Cora.

Habitat.—Throughout India and Burma.

Parts Used.—The entire plant and fresh juice.

Action.—Laxative, alterative and nervine tonic.

Preparations.—Infusion (1 in 80), dose:—1 to 2 ounces; juice, dose:—½ to 1 ounce; paste of the entire plant and a compound powder.

Uses.—Fresh juice is given in insanity, epilepsy, scrofula and nervous debility. According to Chakradatta the *fresh juice* of the plant in doses of about an ounce is given with the addition of honey and *pachak* (Saussurea Lappa) root in all sorts of insanity. A *paste* made of the entire plant including roots and flowers is recommended to be taken with milk as a nervine and alterative tonic. The following *compound powder* is used in similar cases:— Take of *gulancha*, Achyranthes aspera, *baberang*, *pachak* root, root of Asparagus racemosus, Acorus calamus, Chebulic myrobalan and Canscora decussata in equal parts; powder and mix. It is said that the use of this powder for three days will enable a student to learn by rote a thousand couplets of poetry.

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144. CAPPARIS APHYLLA or C. Spinosa.

(*N. O.*—CAPPARIDEÆ.)

Sans.—Karira. *Eng.*—Caper plant; Caper Berry. *Bom. and Arab.*—Kiabara. *Hind.*—Kachra; Kabra. *Mah.*—Nepati. *Can.*—Nispatigay. *Tel.*—Enugadanta; Mumudatu. *Pers.*—Kuraka; Kebir.

Habitat.—In the deserts, especially of Rajputana, Punjab and Sindh.

Parts Used.—The plant, the root-bark and fruits or berries.

Constituents.—The bark contains a neutral bitter principle resembling senegen. The flower-buds contain capric acid and a glucoside which yield on boiling with sulphuric acid isodulcite and a colouring matter similar to quercetin.

Action.—The root-bark is astringent and alterative. The plant is regarded by Kavirajees as acrid, stimulant, laxative etc.

Preparations.—Powder and infusion of root-bark (1 in 10), dose :—½ to 1 ounce. Juice of plant.

Uses.—The root-bark in powder or infusion is used in rheumatism, gout, cough, dropsy, palsy etc. *Externally* the powder is applied to malignant ulcers. The plant in the form of infusion is used externally for boils, eruptions, diseases of the joints and *internally* as an antidote to poison. Kavirajees give it in phthisis, heart diseases, colicky pains and loss of appetite and scurvy. Its fruits and the unexpanded flower-buds are pickled or used as condiment. In Rajputana the plant is a wholesome fodder for camels. The juice of fresh plant is dropped into the ear to kill worms; also a fair substitute for senega.

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145. CAPPARIS CORUNDAS.

(*N. O.*—Apocynaceæ.)

Sans.—Karamardaka; Krishna Pal; Karmoha. *Eng.*—Bengal Currants. *Mal.*—Keelay. *Hind, Guz, Mah.*—Karwando; Karando; Timukhia. *Tam.*—Perinkalak phalam. *Tel.*—Pedda-kalivipandu.

Habitat.—Throughout India in dry, sandy and rocky grounds; Kangra & Katch jungles.

Parts Used.—The fruit, bark and leaves.

Constituents.—The root contains a fixed oil, a volatile oil, a dark yellowish resin and an alkaloid.

Action.—The fruits are stomachic, antiscorbutic, refrigerant and digestive. The unripe fruits are astringent and antiscorbutic.

Preparations.—Syrup of fruits, dose–1 to 2 drachms Juice of fruits, dose–30 to 90 minims; Decoction of leaves dose–1 to 2 ounces.

Uses.—The juice of ripe fruits, mixed with sugar and cardamoms is a cooling drink in biliousness. The decoction of leaves is refrigerant in fevers.

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146. Capparis Diffus. (*Sans.*—Karamarda; *Ben.*—Karamcha) of the genus Capparideae grows in Bengal and South India bearing an edible black fruit larger in size than Karmardaka. The ripe fruit is acid and astringent and is used as a stomachic.

Capparis Trifoliata.—See Crataeva Nurvala or C. Religiosa.

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147. CAPSICUM ANNUM & C. Frutescens.

(*N. O.*—Solanaceæ.)

Sans.—Marichiphalam; Katuvira; Bruhi. *Eng.*—Spanish pepper; Red pepper; Cayenne pepper. *Hind.*—Lal or Gachmirichi. *Ben. and Guz.*—Lalmirichi. *Mah.*—Mirsinga; Mirchi. *Tel.*—Mirapakaya; Galakonda. *Tam.*—Molagay. *Can.*—Kempu Menasu. *Mal.*—Upperi-paranki. Perangimuluk. *Kon.*—Mirsang. *Arab.*—Filfile-ahmar. *Pers.*—Filfil-i-surkh. *Cing.*—Gasmiris. *Malay.*—Chabai: Ladumira.

Habitat.—This plant is very largely cultivated for its fruit throughout the plains of India and in the hills in some districts.

Parts Used.—The fruit, dose—grain ½ to 1. There are three principal varieties.—*Deshi*, *Malabari* or *Ghati*, & *Lavangian* or *Nepali*.

Constituents.—Capsicin, a volatile alkaloid; capsaicin, a crystalline acrid substance; a volatile oil; fixed oil; fatty acid; resin; red coloring matter and ash 4 to 5, p. c. Its pungency and acridity is due to the oleo-resin Capsicin.

Action.—A powerful local irritant; heart stimulant, also general stimulant; stomachic and tonic; of pungent odour and sharp burning taste.

Preparations.—Pills, powder, paste, tincture, decoction or infusion and vinegar.

Uses.—Capsicum is employed in India as a principal ingredient of various curries and chutneys. *Externally* a paste of it is used as a rubefacient and as a local stimulant for the tonsils in tonsillitis. In diphtheria its application is said to hasten the separation of false membranes. In chronic lumbago a plaster of capsicum with garlic, pepper and liquidamber (*silarasa*) or storax is an efficient stimulant and rubefacient applicatiou. *Internally* also it is irritant and large doses produce gastro-enteritis. When made into a lozenge with sugar and tragacanth it is a remedy for hoarseness; employed in the form of tincture as an adjunct to bitter tonics and other stimulants, it is useful in dyspepsia and flatulence; *pills* made of equal parts of capsicum, rhubarb and ginger are used; with cinchona it is useful in intermittent and lithargic affections and also in atonic gout and in advanced stages of rheumatism; with asafoetida and weet-flag root or camphor it is used in the form of pills

in cases of cholera ; also the *decoction* of the fruit with the addition of opium and fried asafoetida is given with equal success in cholera. Capsicum has a powerful action on the mucous membrane and in sore throat, and in putrid throat a gargle made of chillies (4 drachms in 1 bottle of boiling water) is found particularly beneficial. By pouring hot vinegar upon the fruits all the essential qualities are preserved. This chilly *vinegar* is an excellent stomachic imparting a fine flavour to fish and meats. The whole plant steeped in milk is successfully applied to reduce swellings and hardened tumours. An infusion with cinnamon and sugar is a valuable drink for patients suffering from delirium tremens as it satisfies the craving in dipsomaniacs. It is used in the West Indies to relieve the sinking at the epigastrium felt by drunkards.

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148. **Capsicum Fastigiatum** is a species cultivated widely in tropical India. It is a small shrub bearing conical oblong scarlet fruits about $\frac{1}{2}$ to $\frac{3}{4}$ inch long and 1/5 inch thick containing numerous flat reniform seeds having a pungent, peculiar odor and a very hot and biting taste They are known as Guinea pepper or Malabari or *Ghati Mirich*.

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149. **Capsicum Grossum** (*Eng.*—Bell pepper. *Ben.*-Desho-maricha) is a large and inflated variety of C. Frutescens with very little pungency, growing in Western India.

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150. **Capsicum Nepleanse** is a Nepal species diminutive in size but with great pungency. These are

known as *Lavangian* or Nepali *marich*. The fruits are very highly esteemed. They have a peculiar flavour.

Cardamomum Repens.—See Elattaria Cardamomum.

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151. CARDIOSPERMUM HELICACABUM.

(*N. O.*—SAPINDACEÆ.)

Sans..—Jyotishmati; Karnasphota; Paravata-padi; Lataphatki; Banu-uchchhe. *Eng.*—Balloon vine or winter-cherry; heart's pea. *Hind.*—Kanphata. *Mah.*—Kanphuti; Shibjal: Kakumardanika. *Ben.*—Nayaphataki. *Guz.*—Karodio. *Duk*,—Shibjub. *Can.*—Kanakaia. *Mal.*—Ulinja. *Tam.*—Moddacoatan. *Tel.*—Buddakakara; Nellagulise-tenda: Vekkuditege. *Burm.*—Malmai. *Fr.*—Poi-de-coeur. *Ger*—Gemeiner herzsamen.

Habitat.—India, chiefly Bengal and U. P.

Parts Used.—The herb:—the roots, leaves and seeds.

Constituents.—The seeds or fruits yield a kind of essential oil, bitter and stimulant.

Action.—The root and the leaves are diuretic laxative, stomachic and alterative; externally rubefacient.

Preparations.—Decoction of the root (1 in 10), dose:—4 to 10 drachms. A compound powder made up of Carbonate of potash, root of Acorus Calamus, root-bark of Terminalia Belerica and the leaves of this plant, all in equal parts; dose is 1 drachm.

Uses.—The *root* and the *leaves* of the herb in decoction are used in rheumatism, nervous diseases, piles, chronic bronchitis and phthisis; also in amenorrhoea for which the compound powder is specially indicated, which is

given for 3 days in 1 drachm doses. The leaves fried are applied to the pubes to increase the menstrual flow in amenorrhœa. The leaves boiled in oil such as castor oil are applied over rheumatic pains, swellings and tumours of various kinds. The *juice* of the plant is dropped into the ear in earache and discharge from the meatus. Decoction of the root is given in half-ounce doses in cases of piles and amenorrhoea.

152. CAREYA ARBOREA.

(*N. O.*—MYRTACEÆ).

Sans, Hind & *Ben.*—Kumbi. *Guz., Mah* & *Ben.*—Vakumbha. *Tel.*—Dudippi. *Tam.*—Pailacputatammi. *Can.*—Daddala. Guddada-ippae. *Mal.*—Peelam, Paer, Alam, Ukamaram, *Mysore.*—Govuldu.

Habitat.—Frequent in Sub-Himalayan tract from the Jumna eastward.

Parts Used.—Bark, fruit, flowers and juice.

Constituents.—The thick red bark contains tannin 8 p. c. The liber contains calcium oxalate in large simple crystals.

Action.—The bark is astringent; the juice of the bark, is demulcent; the fruit is also astringent.

Preparations.—Decoction of the bark (1 in 10), dose:—½ to 1½ ounces.

Uses.—The bark when moistened gives out mucilage and is therefore prescribed for emollient embrocations; the bark is applied to the wound in snake-bite and an *infusion* of the same is given internally. The leaves made into a pulp and used as poultice 3 to 4 times a day rapidly heal obstinate ulcers; the *flowers* are given in *sherbat* or in infusion after child-birth to heal ruptures

caused by child-birth. The *juice of the fresh bark* as well as flowers is administered with honey as demulcent in coughs and colds. Boils, abscesses and ulcers cleaned and washed with the *decoction* of the barks are said to heal rapidly; for the same purpose the decoction is employed in cases of dysentery and also internally on account of its astringent action in indigestion. The fruit is used as decoction to promote digestion. It is also pickled and used.

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153. CARICA PAPAYA.

(*N. O.*—PASSIFLOREÆ).

Eng.—Papaw tree. *Hind.*—Popaiyah. *Pers & Arab.*—Amba-hindi. *Punj.*—Arand-kharbuza. *Ben.*—Papaya. *Guz.*—Papayi. *Mah.*—Popaya. *Tel.*—Boppayi. *Tam.*—Poppayi. *Can.*—Pappangaye. *Mal.*—Kappalam; pappayam. *Kon.*—Poppaye-phal. *Sind.*—Paputa; Katha chibado. *Fr.*—Papayer Commun. *Ger.*—Melonenbaum.

Habitat.—This valuable tree is commonly cultivated in gardens throughout India; indigenous in America.

Parts Used.—The milky juice, seeds and pulp.

Constituents.—The juice contains an albuminoid, digestive or milk curdling ferment—*papain or papayotin*. The fresh fruit contains a caoutchouc-like substance, a soft yellow resin, fat, albuminoids, sugar, pectin, citric, tartaric and malic acids, dextrin etc. The dried fruit contains a large amount of ash 8·4 p.c., which contains soda, potash and phosphoric acid. The seeds contain an oil, papaya oil or caricin, an oil-like substance of a disagreeable taste and smell and several acids similar to palmitic acids, carica fat-acid and a crystalline acid called papayic acid, also a resin-acid and a soft resin. The

leaves contain an alkaloid called *carpaine* which with hydrochloric acid forms Carpaine hydrochloride soluble in water, used hypodermically as an injection; dose:—1/30 to 1/15 of a grain as a cardiac tonic in place of digitalis.

Action.—Papayotin, a concentrated active principle obtained from the milky juice by precipitation with alcohol is a whitish amorphic hygroscopic powder soluble in 75 p. c., of absolute alcohol, water and glycerine; dose:—2 to 10 grains. It is capable of digesting 200 times its weight of fresh, pressed blood-fibrin. Its action is quicker than that of pepsin at a higher temperature and does not require an addition of free acid. 7 grains of papayotin can digest a pint of milk. It acts as a solvent in alkaline solutions and like pepsin it curdles milk; dose:—1 to 8 grains. The milky juice of the unripe fruit is an enzine similar to pepsin acting as a solvent, in alkaline, acid or neutral solutions. It is a powerful digestive of meat-albumen forming true peptones and like pepsin curdles milk. It differs from pepsin in being active without the addition of free acid. As a solvent of fibrin and other nitrogenous substances the juice makes the meat tender. The juice mixed with honey and followed by castor oil acts as anthelmintic for round worms. The seeds are powerfully emmenagogue. The leaves are saponaceous. The filtered juice-unlike pepsin gives no precipitate on boiling but is precipitated by mercury chloride, iodine and all the mineral acids; like pepsin it is precipitated by neutral acetate of lead and does not give any precipitate with copper sulphate and iron chloride. The active principle so separated is named papain or papayotin.

Preparations.—Juice. Pulp, Syrup, Paste or Poultice.

Uses.—Papain or papayotin is most useful in deficiency of gastric juice, excess of unhealthy mucous in the stomach, in dyspepsia, intestinal irritation and the like, in doses of one to five grains; it is also used in solution to dissolve the fibrinous membrane in croup or diphtheria, a solution in glycerine being painted on the pharynx every five minutes; and also applied with good results to ulcers and fissures of the tongue and, in the form of a pigment prepared with borax and water, to remove warts and corns and other horny excrescences of the skin; in psoriasis and chronic eczema especially of the palms of the hands:—Papain 12 grains, powdered borax 5 grains, and distilled water 2 drachms. Mix and make a solution. Apply it to the part affected.

The *juice* from the raw fruit is said to be more efficacious in dissolving albumen than pepsin. The raw fruit is scraped longitudinally and the milky juice is collected; this is put on a sand bath; it should be dried at a low temperature; after 24 hours or so a dull white powder is left; this is the best preparation for internal use; one or two grains with sugar or milk after meals should be given to adults. A preparation of this kind is sold under the name of "Finkler's Papain". The tincture does not keep well and is disagreeable to taste; *syrup* of the powder may be made, if required, for children and women. It is most efficacious in dyspepsia. The fruit is useful in chronic diarrhœa; the green fruit is laxative and diuretic; its juice is emmenagogue and in large doses it acts as ecbolic; applied locally in the shape of pessary to the os uteri it induces abortion; it dissolves coagulated albumen. The fresh milky juice is rubefacient and is an

application for ringworm; it is a certain remedy in cases of scorpion stings; the seeds are also similarly useful; they and the milky juice form the best vermifuge especially for round worms in children. The ripe fruit is alterative and if eaten regularly corrects habitual constipation; it is useful in piles (bleeding piles) and dyspepsia.

Boiled and mixed with lime-juice and sugar it makes a good sauce. The dried and salted fruit reduces enlarged spleen and liver. The unripe fruit is made into a curry and eaten by women to stimulate secretion of milk. The leaves dipped in hot water or warmed over a fire are applied to the painful parts for nervous pains. Bruised *leaves* applied as a *poultice* are said to reduce elephantoid growths; inspissated juice of the fruit in pill form, in doses of 2 to 4 grains, is given internally for the same disease.

Carissa Corundas.—See Capparis Corundas.

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154. CARTHAMUS TINCTORIUS.

(*N. O.*—Compositæ.)

Sans.—Kamalottara. *Eng.*—Saf flower. Parrot seed; Bastard saffron. *Arab.*—Zurtum. *Ben.*—Kajireh *Can.*—Kusumbe. *Guz.*—Kusumbo. *Hind.*—Kusumbar. *Mah.*—Kardi. *Pers.*—Khasakdana. *Tam.*—Sendurkam; Kusumbavirai. *Tel.*—Agni sikha, Kusumbha. *Mal.*—Chendurakam. *Fr.*—Cartheme; faux safran. *Ger.*—Farber safflor.

Habitat.—Tropical and subtropical parts of India.

Parts Used.—The plant, seeds, root and flowers.

Constituents.—The flowers contain red colouring principle *Carthamin* or *Carthamite* insoluble in water, a yellow colouring matter soluble in water, cellulose,

extractive matters, albumen, silica, manganese, iron etc. The seeds contain a fixed oil 30 p. c., albuminoids 13 p. c., carbo-hydrates 18 p. c., fibre 26 p. c., and ash 2 p. c.

Preparations.—Infusion and decoction (1 in 20), dose :—½ to 2 ounces; a medicated oil (the plant boiled in sesamum oil); the oil expressed from the seeds

Action.—The seeds are purgative. The root is used as a diuretic.

Uses.—The dried *flowers* taken in drachm doses internally, are said to cure jaundice. The *plant* boiled in sesamum oil is a valuable remedy for itch. This medicated oil is locally applied to rheumatic and painful joints, paralytic limbs and intractable ulcers. The *hot infusion of dried flowers* is given as a diaphoretic in jaundice, nasal catarrh and muscular rheumatism. A *cold* infusion is used as a laxative and tonic in measles and scarlatina to favour efflorescence of eruptions. The *leaves* curdle milk like rennet. The *oil from the seeds* is a most valuable edible oil, while the oil-cake is a valuable cattle-food, and also a manure for sugar-cane and other crops. It is also used in the manufacture of soaps.

Carum Bulbocastanum.—Similiar to C. Carui.

Carum Carui (B. P.)
C. Nigrum; C. Gracile; } See Nigella Sativa.

Carum Ajowan or C. Copticum or C. Roxburgianum—See Ptychotis Ajowan.

Caryophyllus Aromaticus.—See Myrtus Caryophyllus.

155. CARYOTA URENS.

(*N. O*.—PALMACEÆ).

Ben.—Benkhajur. *Eng.*—Jaggery Palm; Malabar Sago-palm; Hill-palm; Ghatpalm; Bastard Sago. *Duk.*—Marika-jhad, *Guz. and Mah.*—Ardhi-sopari. *Hind.*—Ramguoah. *Mal.*—Irampanae. *Tam.*—Kondapan. *Tel.*—Kondaa-jilugu. *Bom.*—Bhiralimada.

Habitat.—Assam.

Parts Used.—The juice, spirit and the nuts.

Constituents.—Palm sugar.

Preparations.—Palm-juice; palm-wine; confection; sago from the trunk.

Action.—Internally nutritious and aphrodisiac; also laxative.

Uses.—The confection is used in seminal weakness and urinary disorders. The juice is used as a palm toddy. It is also used as an application to the forehead in hemicrania. A glass of freshly drawn toddy taken early in the morning acts as a laxative. The nut made into a paste is applied to the forehead in hemicrania. The pith or farinaceous part of the trunk of old trees is considered equal to the best sago. It is baked into bread and boiled into thin gruel.

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156. CASEARIA ESCULENTA.

(*N. O.*—SAMYDACEÆ).

Eng.—Wild cowrie fruit. *Hind.*—Bairi; chilla; chilara. *Mah.*—Mora-ageru; Mormassi; Pingri; Bithari. *Tam.*—Kad-dlashingi. *Tel.*—Gundu-gungure. *Goa.*—Satagunda.

Habitat.—Malabar, Bombay to Coorg and Ceylon.

Parts Used.—The root and bark.

Constituents.—The bark contains tannin and a principle allied to cathartic acid. The root contains a brownish-yellow resin (which is partially soluble in spirit); tannic acid; a colouring matter; a small quantity of starch; and also a neutral principle "crystallizing in white transparent prisms."

Preparations.—Decoction (1 in 20), dose:—1 to 2 ounces. Extract, dose—10 to 20 grains. Syrup (1 of extract in 6 of syrup), dose:—1 to 2 drachms.

Action.—The root and bark are astringent. The root is also a mild aperient and alterative.

Uses.—The paste of the root is applied locally to piles. The root is a valuable internal remedy for enlargement and chronic congestion of the liver and piles. It very soon removes the feeling of weight and tension in the hepatic region. It is best given as a decoction. Its action on the liver is very marked. It is also given in diabetes.

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157. CASSIA ABSUS.

(*N. O.*—Leguminosæ).

Hind. and Duk.—Chakur; Chaksu; Banar. *Tam.*—Mulaippalavirai; Kuttukkol; edikkol. *Tel.*—Chanupalavittulu. *Mal.*—Karinkilla. *Bom.*—Chaksie. *Mah.*—Chamada; Kan-kuti. *Guz.*—Chimar; Chinola. *Sind.*—Chowan. *Punj.*—Chaksoo. *Arab.*—Habusasonadava; Chasa-mizaja. *Pers.*—Chohsha-Makn; Chasauma.

Habitat.—From the foot of the Himalayas to Ceylon.

Parts Used.—The seeds and leaves.

Constituents.—The seeds reduced to fine powder lost 13.5 p.c. at 100 °C; the ash amounted to 3.7 p.c., and

contained a trace of manganese. Extracted with water acidulated with sulphuric acid, the solution indicated the presence of an alkaloidal principle. The extract also contained a yellow resin insoluble in alkalies. The petroleum ether extract contained a non-drying oil insoluble in alcohol. The ether extract contained a trace of oily matter completely soluble in petroleum ether. (Dymock).

Action & Uses.—Muhammadan writers describe the seeds as attenuant and astringent and say they strengthen the sight when used as a *collyrium*. A *plaster* made from the seeds is recommended as an application to wounds and sores especially of the penis. In purulent ophthalmia about a grain of the *powdered* seeds after being baked is introduced beneath the eyelids. The receptacle of the seeds possesses diuretic and stimulant properties. It is used as a cathartic in habitual constipation; dose:—3 drachms. Seeds are found efficacious in cases of ringworm. They form one of the ingredients of aphrodisiacs like *Methi ladu* and *Vakerio-ladu*.

Cassia Acutifolia or C. Angustifolia.—See Cassia Lanceolata.

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158. CASSIA ALATA or C. Bracteata or C. Herpetica.

(*N. O.*—LEGUMINOSÆ.)

Sans.—Dadrughna. *Eng.*—Ringworm Shrub. *Hind. and Ben.*—Dadmurdan. *Mah.*—Dadamurdana. *Tel.*—Sheemaavisi; Mettatamara. *Tam.*—Vendukolli; Sheemai-agatti. *Can.*—Sheemigida., Agase-gida. *Mal.*—Seemagati. *Kon.*—Daddupana. *Duk.*—Dad-ka-patta; Vilayati-agati.

Habitat.—It is cosmopolitan in the tropics, met with all over Bengal and many other parts of India.

Parts Used.—The leaves.

Preparations.—Extract, dose :—1 to 4 grains ; Tincture (1 in 5), dose.—½ to 2 drachms. Decoction and paste.

Action.—The leaves are antiparasitic. Decoction is astringent ; tincture and extract act as purgative.

Properties & Uses.—The *leaves* bruised into a *paste* with an equal weight of simple ointment or borax is a specific for ringworm and similar other skin affections ; to be more effective it should be mixed with a little lime-juice or common salt; or the juice of the leaves mixed with a little lime juice, makes an equally efficacious application. The *leaves in decoction* is considered as a cure for herpes and other skin diseases, even venereal affections and all poisonous insect bites, and also as a general tonic. The decoction of the leaves and flowers, is used as expectorant in bronchitis and dyspnœa and as astringent it is used as a mouth-wash in stomatitis. A *tincture* of the dried leaves or an *extract* from the leaves acts as a purgative like that of senna or colocynth. A *strong decoction* of the leaves and flowers is a good wash for eczema.

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159. CASSIA AURICULATA.

(*N. O.*—Leguminoseæ.)

Eng.—Mature tea tree ; Tanner's Cassia. *Hind & Duk.*—Tarwara.—*Guz.*—Awala. *Mah.*—Taravada *Tel.*—Tangaedu. *Tam.*—Avarai. *Can.*—Taravada-gida ; Avarike Chakusina-gida. *Mal.*—Aveeram, Jimute ; Ponnaviram.

Habitat.—It grows wild in the Central Provinces, Western Coast, South India and Ceylon.

Parts Used.—The root, the leaves, flowers, bark and seeds.

Constituents.—The bark contains tannin 25 p. c. and ash 5 p. c.

Action.—The seeds are said to be refrigerant and attenuant; the bark is astringent & tonic. The root in decoction is used as alterative.

Preparations.—Infusion of leaves (1 in 20), dose 1 to 2 ounces. Infusion of bark; Compound syrup (of flowers, mixed with *Mocharas* and Sarasparilla), dose,—2-4 drachms; decoction of root (1 in 20), dose.—2 to 8 drachms; electuary of the seeds, dose.—2 to 4 drachms; medicated baths of leaves.

Uses.—The *seeds* in fine powder or paste are valued local applications to purulent ophthalmia or conjunctivitis known as "country sore eye"; the seeds with their testa and their kernels are finely powdered and blown into the eyes or the *powder* mixed with cocoanut or gingelly oil is applied to the sore eyes. The plant is used in the form of a powder mixed with honey or the *decoction*, especially of the flower buds, is administered in chylous urine and diabetes with excellent results. The *twigs* are used as tooth-brushes. In the south of Ceylon the *leaves* are used as a substitute for tea. The *flowers* are used as pessaries by women in Gujarat to check excessive menstrual flow. *Infusion of bark* may be used for enemas, gargles &c., as a substitute for tannic acid. The *compound syrup* is prescribed for nocturnal emissions.

160. CASSIA FISTULA.

(*N. O.*—LEGUMINOSÆ).

Sans.—Nripadruma Araghada ; Rajavraksha ; Suvarnaka. *Eng.*—Indian Laburnum ; Pudding pipe tree ; Purging Cassia. *Hind. & Duk.*—Amaltas ; Girmalah, Kirvali. *Ben.*—Bundarlati ; Sonalu ; Sundali. *Guz.*—Garmala. *Mah.*—Bahava. *Tel.*—Kondrakayi Raelachettu, Aragvadhamu. Koelapenna. *Tam.*—Konai, Irajviruttam. *Can.*—Kakkæmara. *Mal.*—Konna. *Kon.*—Kakkayi. *Cing.*—Ahalla.

Habitat.—Common throughout India and Burma.

Parts Used.—The pulp, root-bark, flowers, leaves and root.

Constituents—By steam-distilling the finely powdered fruit, a dark-yellow volatile oil with honey-like odour is obtained. The water which distils over with the oil contains normal butyric acid. The pulp consists of sugar, gum, astringent matter, gluten, coloring matter and water.

Action.—The pulp, the root-bark, seeds and leaves possess purgative properties. The root acts as purgative, tonic and febrifuge.

Uses.—The pods of this tree, about 1 to 1½ feet in length, are used in medicine. The pulp is an agreeable mild laxative, safe for children and pregnant women. It is best used combined with other purgatives as a confection or electuary as by itself it requires to be taken in doses of from one to two ounces to produce any effect. It is an ingredient in the confection of senna. Cassia pulp is also employed in the essence of coffee. A confection of the pulp in 2 to 4 drachm doses is a mild purgative producing 1 or 2 soft motions. The confection made of the pulp is given in cases of diabetes. *Gulkhand* of

which it forms an ingredient is a cooling laxative especially for delicate women; dose is half an ounce with warm milk taken at bed time. *Externally* the pulp is considered to be a good application for gout, rheumatism etc. The pulp of the ripe pod mixed with tamarind pulp taken at bed time acts on the bowels mildly causing one or twe soft motions the following morning. In the flatulent colic of children it is commonly applied round the navel to produce motions The flowers in decoction are given in stomach affection. *Externally* the leaves ground into a paste are applied to ringworm; the bark and leaves mixed and rubbed with oil are applied to pustules, ringworm, chilblains, insectbites, facial paralysis and rheumatism. From 5 to 7 of the powdered seeds are prescribed as an emetic. The root is useful in fever, heart-diseases retained excretions, biliousness etc

161. CASSIA LANCEOLATA; Var., C. Angustifolia; Var., C. Elongata.

(*N. O.*—LEGUMINOSÆ,)

Eng.—Tinnevelly or Indian Senna.—*Hind & Ben*—Sunnamaki, Sana. *Arab.*—Sana-e-Hindi. *Duk.*—Nat-ki-Sona. *Guz.*—Senamakki. *Mah.*—Mulcacha Sonamakki. *Tel.*—Naelaponna. *Tam & Can*—Nilavirai. *Mal.*—Nilavaka.

Habitat.—Cultivated in Southern India, at Tinnevelly and in the Bombay Presidency.

Parts Used.—The pods and leaves.

Constituents.—The pods and leaflets contain *cathartin* (cathartic acid with one or two earthly basis); also senna-picrin (senna-sugar, catharto-mannit or sennit) sennacrol, chrysophan, phoecretin, mucilage, vegetable salts (tartaric & oxalic acids) and ash.

Action.—Purgative, but heaty and is apt to gripe and cause nausea; but it is free from astringency and does not induce after-constipation.

Preparations.—Powder, dose.—1 to 2 drachms; Confection, dose.—1 to 4 drs. Compound Infusion, dose.—1 to 2 ounces; Syrup, dose.—1 to 2 drachms; Tincture, dose.—1 to 4 drachms.

Uses.—Senna is most commonly employed in conjunction with an aromatic and alkaline salt to prevent griping. It should not be administered when there is irritation and fever, nor during pregnancy nor the existence of piles. It may be given to children and elderly persons when a tolerably active purge is required, and it is good to combine a saline aperient such as epsom salt with it. The compound infusion is prepared as follows.—Senna leaves 4 drachms, raisins (stoned) 1 ounce; ginger (bruised) and cloves (powdered), each one drachm and boiling water a pint; macerate four hours in a covered vessel and strain; dose is 1 to 2 ounces; with the addition of milk and sugar it will taste like tea and will be readily taken by children. A table-spoonful of brandy will add to its stomachic properties and make it keep better, but, if for children, this should not be added. The infusion should be kept in a cool place. The pods of the senna tree also possess purgative property but in a less degree than the leaflets; 6 to 12 pods for adults and 3 to 6 for children and the aged. They are best infused in a glassful of cold water for 6 to 8 hours and the whole taken. *Externally* powdered leaves mixed with vinegar and made into a *plaster* are applied locally in certain skin diseases. Senna leaves combined with Henna are used as a hair-dye to make the hair black.

162. Cassia Obovata or C. Senna found in Punjab, Sind, W. Peninsula known as *Surati-sonamukhi* in Guzrat (*Mah.*—Bhui-tarwad. *Tam.*—Nilavagai) is another source of medicinal senna leaves. Its composition is almost the same as that of C. Lanceolata.

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163 CASSIA OCCIDENTALIS.

(*N. O.*—LEGUMINOSEÆ.)

Sans.—Kasamarda. *Eng.*—Negro Coffee. *Hind. Duk. & Bom.*—Kasunda. *Ben.*—Kalakasunda. *Guz. & Mah.*—Kasuvayee ; Hikal. *Tel.*—Kasinda. *Tam.*—Nattutakarai : Paeyavirai, Ponnavirai. *Mal.*—Natrum-takara ; Ponnaveeram. *Can.*—Doddatagache. *Kon.*—Hodu taikilo.

Habitat.—A common weed scattered from the Himalayas to the Western Bengal, South India, Burma and Ceylon.

Parts Used.—The leaves, seeds and roots.

Constituents.—The seeds contain fatty matters (olein and margarin), tannic acid, sugar, gum, starch, cellulose, achrosine and traces of Calcium sulphate and phosphate, sodium chloride, magnesium sulphate, iron, silica, malic acid and chrysophanic acid. Achrosine is so called, because the colour cannot be fixed upon tissues by any mordant. The leaves contain *cathartin*, a colouring matter and salts. The roots contain a resin, a bitter non-alkaloidal principle.

Action.—The leaves, roots and seeds are purgative. The root is considered as also diuretic and antiperiodic.

Preparations.—Infusion and decoction.

Properties & Uses.—The *seeds* roasted and ground have been used as a substitute for coffee. The medicinal properties are destroyed in the roasting process. The seeds

4 to 12 grains grounded with a tola of milk and strained are given once a day to children in convulsions; or in doses of $1\frac{1}{2}$ drachms it may be given to the mother or wet-nurse. The seeds are also useful in cough and whooping cough; the dose of the leaves is 90 grains. *Externally* the seeds and leaves are applied smeared with grease to slight sores, itch, blisters etc; the seeds are used in France and West Indies as a febrifuge in the form of a wine or tincture. The infusion of the *root* is considered as an antidote to various poisons; it is given in fevers and neuralgia; useful also in incipient dropsy. The infusion of root (1 in 20) is given in doses of $\frac{1}{2}$ to 1 ounce and the *decoction of whole plant* (1 in 10), in doses of 2 to 6 drachms; in skin diseases as an application. A *decoction of the leaves, roots and flowers* is highly prized in hysteria to relieve the spasm; also useful in relieving flatulence of dyspeptic, nervous women. A decoction of the powdered seeds (1 in 10) is given in doses of 1 to 2 ounces in cases of constipation as a mild purgative.

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164. CASSIA SOPHORA or C. Coromendeliana.

(*N. O.*—LEGUMINOSÆ.)

Sans. & *Can.*—Kasamarda. *Eng.*—Senna Sophera; Senna Esculenta; Senna purpurea. *Hind.*—Bas-ki-Kasunda. *Duk.*—Jangli-takla. *Mah.*—Ran-tankala. *Tel.*—Paidi-tangaedu. *Tam.*—Peria-takarai. *Mal.*—Ponnantakara. *Ben*—Kalkasunda.

Habitat.—Common throughout the tropics and India.

Parts Used.—The bark, leaves, seeds, root and root-bark.

Action.—The bark, leaves and seeds are cathartic; the root is considered expectorant. The leaves are anthelmintic and antiseptic

Preparations.—Infusion, powder, plaster, and ointment.

Properties & Uses.—The *juice* of the leaves made into a *plaster* with sandalwood or mixed with lime-juice or a paste made from the root with *conjee* or powdered seeds is viewed as a specific for ringworm, also for dhobi itch; it is given *internally* as an expectorant for coughs; Infusion or *decoction of the leaves* is given in asthma, hiccup etc.; given with black pepper the *root* is a remedy for snake-bite. *Bark in infusion* or the *powdered seeds* with honey are given in diabetes. The *ointment* of the bruised seeds, leaves and sulphur or the *root bark* ground into a paste with honey is an application for ringworm and patches of pityriasis and psoriasis. This virtue seems to be due to the chrysophanic acid which it and other species of Cassia contain. The *infusion of the fresh leaves* is a useful injection in gonorrhoea in the sub-acute stage; when it is administered internally it acts as an anthelmintic. *Externally* it is used for washing syphilitic sores. It is dropped into ears invaded by any insects. The infusion of the leaves is administered also in rheumatic and inflammatory fevers; mixed with sugar it is given in cases of jaundice. A decoction of the whole plant is said to be useful in diminishing urine, and as an expectorant it is found to give relief in cases of acute bronchitis.

165. CASSIA TORA; C. Toroides; C. Foetida; C. Obtusifolia; C. Tagara.

(*N. O.*—LEGUMINOSÆ).

Sans.—Dadamardana; Kharjugna; Taga; Ayudham; Prabhoonata; Chakramarda; (destroyer of ringworm). *Hind, & Ben.*—Chakunda, Panevar. *Duk.*—Tarota. *Bom & Guz.*—Kovaraya. *Mah.*—Tankala. *Tel.*—Tagirisa. *Tam.*—Ushitagarai Tagarai. Aendu. *Can.*—Tagache, Taragashee. *Mal.*—Takara. *Kon.*—Daddupan. *Eng.*—Foetid Cassia. *Arab.*—Kulikul; Sanji. *Burm.*—Dan-kilay-iwai. *Cing.*—Tora.

Habitat.—Bengal and throughout the tropical parts of India.

Parts Used:—The leaves, seeds and roots.

Constituents:—Both leaves and seeds contain a glucoside resembling chrysophanic acid. The leaves contain a principle similar to cathartin and a red coloring matter and mineral matters.

Action:—The mucilaginous and foetid smelling leaves are internally gentle aperient, externally germicide and antiparasitic; they have also maturant and anodyne action. The root and seeds also have the same properties, externally.

Preparations:—Decoction, Paste, Poultice and Oil.

Uses:—Both *leaves* and *seeds* constitute a valuable remedy in skin diseases; *seeds* steeped in the juice of Euphorbia Nerifolia and then made into a *paste* with cow's urine is an application to cheloid tumours; also useful in leprosy, psoriasis, etc., ground with sour buttermilk or lime.juice and applied to ease the irritation of itch or skin eruptions. The root rubbed into paste with lime-juice or is said to be a specific for ringworm, applied also for buboes in plague. The mucilaginous and foetid smelling *leaves* are

prescribed *in decoction* (1 in 10) in 2-ounce doses for children suffering from feverish attacks while teething; boiled in castor oil they are applied to foul ulcers; also inflammations caused by any irritant. They are also used as a *poultice* to hasten suppuration. It forms a warm remedy in gout, sciatica and pains in the joints. The seeds have been used as a substitute for coffee. An oil called *Chakra-mardha* and containing Cassia tora and Eclipta alba is a very useful application in obdurate skin diseases such as ringworm &c.

Cassuvium Porniferum:—See Anacardium Occidentalum.

Castalia Alba:—See Nymphoea Alba.

166. The Egyptian Castalia Lotus of the genus Nymphoea- (N. O.—Nymphoceæ) is met with in Bengal with white or pink petals or mixed, in shallow autumn flood waters. Its stem is regarded as astringent and refrigerant; it is eaten by the poorer classes.

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167. CEDRELA TOONA.

(*N. O.*—MELIACEÆ.)

Sans.—Tuna; Kuberaka; Nandi-vraksha. *Eng.*—The Red Toon or Indian Mahogany Tree. *Hind. and Ben.*—Toona. *Uriya.*—Mahalimbu. *Punj.*—Khusing. *Nepal.*—Labshi. *Mah.*—Deodari. *Tam.*—Tunu-maram. *Tel.*—Nandi-chettu. *Mal.*—Aranamaram. *Can.*—Kempu-gandhagiri; devadari. *Bom.*—Kooruk. *Burm.*—Thit-ka-du.

Habitat.—Tropical Himalaya from the Indus eastward and throughout the hilly districts of Central and Southern India.

Parts Used.—The bark, gum and flowers.

Constituents:—Resin, extractive matter, gum &c.

Action.—The bark is a powerful astringent and valuable antiperiodic. The flowers known as *"gultar"* in Bombay are considered emmenagogue.

Uses.—The *bark* in the form of *infusion* is given in chronic infantile dysentery; the dose for the infant is ½ to 1 drachm. The *powder* of the bark is a useful application in various forms of ulceration. With bonduc nut as a tonic and antiperiodic the infusion is given in fevers, rheumatism and dysentery. The *flowers* are given in disordered menstruation.

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168. CEDRUS DEODARA.

(*N. O.*—CONIFERÆ.)

Sans.—Vrikashapa; Snehaviddha; Devadaru. *Eng.*—Pinus Deodara, Himalayan cedar. *Hind.*—Deodar; Toona. *Ben.*—Toon. *Tam.*—Toon-maram. *Tel. and Can.*—Devdari. *Mah.*—Devataram. *Punj.*—Pahadi-keli.

Habitat.—All over the Northern Himalayas; largely cultivated in India as an ornamental tree.

Parts Used.—The wood, the bark, leaves and turpentine.

Constituents:—The wood yields an oleo-resin known as *Kelanka-tel* and a dark-colored oil or tar resembling crude turpentine is obtained by destructive distillation.

Action:—The wood is carminative The bark is powerfully astringent and febrifuge. The leaves have mild terebinthinate properties.

Uses:—The *bark* is a good remedy in remittent and intermittent fevers, diarrhoea and dysentery and though not bitter it is a fair substitute for Peruvian bark particularly when united with powdered Bonduc nut. Its *powder* is applied with much benefit in the treatment

of ulcers. It is considered especially useful in bilious fevers and inveterate diarrhœa arising from atony of the muscular fibre.

The *oleo-resin* and the *dark colored oil* or *turpentine*, are applied to ulcers and skin diseases They are valuable in mange in horses and sorefeet of cattle.

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169. CELASTRUS PANICULATUS; C. Montana, C. Multiflora, C. Nutans.

(*N. O.*—CELASTRINEÆ.)

Sans.—Vanhiruchi; Katumbhi. *Eng.*—Staff tree (the oil Oleum nigrum). *Bom., Hind., Guz.*—Malakanguni. *Mah.*—Kanguni. *Punj.*—Sankhu. *Can.*—Kariganne. *Tam.*—Ati-pari-chcham. *Tel.*—Mala-eri-kata; Bavunji; Gundu-mida.

Habitat.—Hilly districts, Himalayas and Ceylon.

Parts Used.—The seeds, leaves and oil.

Constituents.—The seeds, contain an oil, a bitter resinous principle, tannin and ash 5 p.c. The oleum nigrum—an empyreumatic black oil is obtained by the destructive distillation of the seeds.

Action.—The oil is rubefacient. The seeds are alterative, stimulant and nervine; they are supposed to stimulate the intellect and sharpen the memory. The oil has also the same effect.

Preparations.—Decoction of seeds and Pomatum or Pomade.

Uses.—The *oil* with benzoin, cloves, nutmeg and mace added is said to be a sovereign remedy in Beri-beri and a powerful stimulant; dose 10 to 15 minims. *Decoction* of seeds (1 in 10) with or without the addition of aromatics is given in rheumatism, gout, paralysis and leprosy. The oil is used as pomade for relieving rheumatic pains of a

malarious character and in paralysis. It is also used in the form of pomatum made by mixing one part of the oil in 8 parts of butter for application to head. It is known as *Magzsudhi* (Brain clearer) and believed to promote intelligence.

Celosia Argentia or C. Crestata.—See Amaranthus Poligamus.

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170. CENTIPEDA ORBICULARIS or Artemesia Sternutatoria or A. Ptarmica

(*N. O.*—COMPOSITÆ.)

Sans.—Chikkana; Chhikika. *Eng.*—Sneezwort. *Hind. Ben. and Bom.*—Nakk-chhikni; Nagdowna; Machittic. *Ben.*—Mechitta. *Mah.*—Nakasinkani; Shikani. *Sind and Arab.*—Afkur. *Santal.*—Bedi Achim. *Guz.*—Chhikani.

Habitat.—Plains of India and Ceylon.

Parts Used.—The seeds and the herb.

Action & Uses.—The minute *seeds* are used as a sternutatory, also the powdered herb. It is administered in ozena, headaches and colds in the head. Boiled to a *paste* and applied to the cheeks it is employed in the cure of toothache; used also for hemicrania. It is considered a hot and dry medicine, useful in paralysis, pains in joints and special diseases; also as a vermifuge. The plant in *infusion* has been found to be a very efficient application in cases of ophthalmia, purulent or otherwise.

171. CEPHALANDRA INDICA.

(*N. O.*—CUCURBITACEÆ.)

Sans.—Vimboshta; Vimbaja; Vimba; Tundika. *Hind.*—Kanduri. *Guz.*—Gholi. *Mal.*—Kova. *Mah.*—Ran-tondala. *Tam.*—Kovai. *Can.*—Tonde-konde. *Ben.*—Tela kucha. *Tel.*—Dondatiga; Kakidonda.

Parts Used.—The leaves, root, fruit and bark.

Constituents.—The root contains resin which is soluble in caustic soda and in amylic alcohol and an alkaloid, starch, sugar, gum, fatty matters, an organic acid and ash 16 p c., which contains no manganese.

Action.—Alterative. Dried bark is a good cathartic. The leaves and stem are said to be anti-spasmodic and expectorant.

Preparations.—Tincture (1 in 10), dose $\frac{1}{2}$ to 1 drachm. Decoction of the leaves and stem (1 in 10), dose $\frac{1}{2}$ to 1 ounce; Powder of the dried bark, dose is 30 grains; juice of the root, dose.—1 to 3 drachms.

Uses.—The fresh expressed juice of the root is given in diabetes, enlarged glands and in skin diseases such as pityriasis. The leaves mixed with ghee are applied like liniment to sores and skin diseases. The leaves are also applied to skin eruptions such as those of small-pox and the plant is generally used as tincture internally in gonorrhoea. Fresh juice of leaves is applied to the bites of animals; also applied to the body to induce perspiration in fevers. The green fruit is chewed to cure sores on the tongue. The decoction of the leaves and stem is said to be useful in bronchial catarrh and bronchitis. The leaves boiled in gingelly oil are applied to ringworm, psoriasis, itch; the oil is also used as an application to ulcers, and as an injection into chronic sinuses.

172. CERBERA ODOLLAM; C. Manghas; Quaternifolia.

(*N. O.*—APOCYNACEÆ).

Eng.—Odallum tree. *Burm.*—Kullu. *Ben.*—Dabur: dhakur. *Hind.*—Pilikirbir. *Mah.*—Sukanu. *Tam.*—Kadamoth: Kata-arali. *Mal.*—Odallum. *Pers.*—Kanerzard. *Can.*—Honde.

Habitat.—Salt swamps in Malabar and creeks on the sea coast of India, Ceylon and Laccadives.

Parts Used.—The seeds, the bark, leaves and milky juice.

Constituents.—A poisonous glucoside identical with thevatine; cerebrin occurs in the seeds which yield 55 p.c. of a fixed oil and ash 3·3 p. c.

Action.—The bark, leaves and milky juice are emetic and purgative. Like Thevetia nerifolia the kernal of the seed or fruit also is emetic and purgative, in large doses irritant and used for criminal purposes to procure abortion. The villagers use the fruit combined with dhatura seeds in hydrophobia. The fixed oil obtained by expression or by means of petroleum ether is used for annointing the head.

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173. CEROPEGIA BULBOSA; C. Acuminata; C. Tuberosa.

(*N. O.*—ASCLEPIADEÆ).

There are three varieties of this plant.—(1) Bulbosa proper; (2) Esculenta. (3) Lushii.

Punj.—Galot. *Mah.*—Khapparkadu; Gayla. *Tam.*—Bach-Chalimanda *Tel.*—Manchi-manda.

Habitat.—Western India, Punjab, Upper Gangetic plains as far east as Allahabad, southward to Travancore.

Parts Used.—The tubers of this twining herb.

Constituents.—The tubers are found to contain starch, sugar, gum, albuminoids, fat, crude fibre, and ash 9·4 p c., containing manganese. The bitter principle of the tubers is an alkaloid *Ceropegine* soluble in ether, alcohol and water.

Action & Uses.—The tubers of this and several other species of Ceropegia are used as tonic and digestive. The tubers when boiled lose their bitterness and pulped with milk form a sweet mucilaginous mixture which should be highly nutritious, judging from their chemical composition. The drug is used in Behar in colds and eye diseases to cause sneezing; dose is 1 grain to ½ drachm. The tubers are given in leucorrhœa, seminal debility, bowel complaints of children &c. They form an ingredient of aphrodisiac and tonic confections.

Chavica Betel.—See Piper Betel.

Chavica Roxburghii.—See Piper Longum,

Chirongia Sapida.—See Buchanania Latifolia.

174. **Chenopodium Ambrosioides** is one of the pot-herbs belonging to the Natural Order "Chenopodiaceae" (*Mal.*—Kutu-ayamodakam) generally met with in South India, The seeds or the fruits and the volatile oil obtained by distilling the fruits with steam or water are used as anthelmintic chiefly for ascaris and ankylostomum. The oil in 10 minim doses is said to expel hookworms. Other plants of the same Order contain volatile oil which is useful as antispasmodic, aromatic, nutritious, laxative, carminative and stimulant, besides being anthelmintic.

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175. CICER ARIENTUM.

(*N.O.* Leguminosae.)

Sans.—Chanaka. *Eng.*—Chicken-pea, Bengal gram. *Bom.*—Harbarchana *Hind. & Guz.*—Chana. *Ben.*—Chotabut, Butkalai. *Mah.*—Harbar. *Tel.*—Senagalu; Chanakamulu. *Tam. and Can.*—Kadalai. *Mal.*—Katala. *Kon.*—Chano. *Arab.*—Humug. *Burm.*—Ku-lo-pan. *Ital.*—Ce ce. *Pers.*—Chola. *Punj.*—Nakhud. *Fr.*—Poischi *Ger.*—Z weigerbse.

Parts Used.—Seeds or peas, the acidulous water or acid exudation and leaves.

Constituents.—The acid liquid holds in solution oxalic, acetic and perhaps malic acids. Nitrogen per ounce is 14 grains. The seed contains starch 59 p.c., albuminoids 20 p. c., fats 4 p. c., fibre 1 p, c., ash 2 p.c., and phosphoric acid 1 p. c. and water 11 p.c.

Action.—The plant is refrigerant. The seeds are antibilious The acid fluid is astringent. When roasted the pulse is considered to be aphrodisiac. Fried seeds are said to be diuretic. The leaf-juice is stomachic and laxative.

Uses.—The *plant* is employed in fevers; also in the treatment of dysmenorrhoea; the fresh plant is put into hot water and the patient sits over the steam. The free use of the vegetable, owing to the abundance of oxalic acid, is apt to do harm to persons liable to calculus as it leads to the formation of oxalate of lime in the bladder. It is said to increase biliary secretions. The seeds are given in dysentery as astringent. Fixed seeds are said to relieve flatulence. The acid liquid obtained by collecting the dew drops from the leaves by means of spreading a thin white cloth over-night on the tree or by any other means contains oxalic, acetic and malic acids and it is a

useful astringent given in dyspepsia, vomiting, indigestion and costiveness ; also in diarrhoea and dysentery. The boiled leaves are a nice application to sprains and dislocated limbs. When roasted like coffee the pulse relieves flatulence and retention of urine as it stimulates diuresis. The liquid obtained from macerating the seeds is a tonic ; it also allays vomiting. In bronchial catarrh the seeds in a parched condition given at night and followed by a cup of warm milk give great relief. The *flour* or meal of the seeds is used as an emollient *cataplasm* and mixed with honey, in cancer.

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176 CICHORIUM INTYBUS or C. Endivia.

(*N. O.*—Compositæ.)

Eng.—Endive : Wild Chicory. *Punj.*—Hand : gul : suchal. *Hind, Bom, Guz, & Ben.*—Hinduba, Kasni *Chin.*—Ku-ku : Ku-tsai. *Mah.*—Kachani. *Pers.*—Kasni, Ambuboia. *Tel.*—Kasini-vittulu. *Tam.*—Kasni-virai. *Arab.*—Shikoriah ; Bazarula : Hindiba. *Pers.*—Tukhm-e-Kasani.

Habitat.—N. W. India ; Persia and Europe.

Parts Used.—The seeds, root and flowers.

Constituents.—The seeds contain a bland oil. Burnt chicory contains sugar, free extractive, cellulose, ash, nitrogenous matter, fat etc. The roots contain nitrate and sulphate of potash, mucilage, some bitter extractive principle and *enulin* 36 p. c. The flowers contain a colourless crystalline glucoside, soluble in alkalies, hot water and alcohol.

Preparations.—Decoction of seeds (1 in 20), dose.—1 to 2 ounces ; Fluid extract of the root, dose.—1 to 2 drachms and Powder.

Action.—Chicory closely resembles Taraxicum; increases bile-secretion and promotes digestion; a stomachic and tonic; in large doses a mild aperient and diuretic. It has also alterative and resolvent effects. From its narcotic character it exerts an effect on the nervous system; hence chicory coffee is considered one of the many causes of amaurotic blindness. Seeds are carminative and cordial. The root is bitter.

Uses.—A *decoction of the seeds* is used in obstructed menstruation. A strong infusion of powdered seeds is useful in obstructions or torpor of the liver and in checking bilious enlargement of the spleen with general dropsy. The *root* is used as a substitute for coffee; with other vegetable bitters it is given in dyspepsia and fever. The *flower* made into *sherbet* is given in liver disorders. Chicory is prepared from the dried older roots which are roasted and powdered. It is useful in removing gravel for which the following powder is very useful:—Take of Chicory 5, *Gokshura* 6, Melon seeds 7, Sweet fennel seeds 8. Mix and make a powder. Dose.—grains 30 to 40. The plant is applied externally in inflammatory affections an account of its cooling properties.

177. CINCHONA CORTEX.

(*N. O.*—RUBIACEÆ).

Eng.—Cinchona Bark. Peruvian Bark, Jesuit's Bark.
Vern.—Cinchona.

Habitat.—The most important species of cinchona are now thoroughly acclimatised in India.—Yellow cinchona bark (Cinchona Calisaya). This species grows best at the Himalyan plantations. Pale Cinchona bark (Cinchona Officinalis, Cinchona Pallidae Cortex).

This is chiefly cultivated on the Nilgiris; and Red Cinchona bark (Cinchona Succirubra, Cinchona Rubrae cortex). This tree which yields the red bark of commerce grows well both in Bengal (in Sikkim) and in the Madras Presidency.

Parts Used.—The dried branch of the stem and branches.—The red Cinchona bark.

Constituents.—Cinchona Barks contain (1) four important alkaloids *viz.*—quinine, cinchonine, quinidine and chinchonidine; (2) three acids, chinic or quinic acid closely allied to benzoic acid, chinovic acid and a variety of tannic acid called cincho-tannic acid; (3) one glucoside.—chinovin which easily splits up into chinovic acid and glucose; (4) one colouring ingredient.—cinchona red, almost insoluble in water; and (5) traces of an aromatic volatile oil which gives the bark its smell.

(*a*) Quinine occurs(as the alkaloid) in white acicular crystals, inodorous and very bitter. It reacts like an alkali, forming neutral acid salts with acids.

(*b*) Cinchonine consists of colourless prisms, inodorous and bitter; forms salts with acids.

(*c*) Quindine is isomeric with cinchonine.

(*d*) Cinchonidine, isomeric with Cinchonine, resembles that alkaloid but its solutions are laevo-rotatory; and when pure are not fluorescent and do not give the Thalleioquin test.

Red Cinchona bark ought to yield 5 to 6 p. c. of alkaloids not less than a half being Quinine and Cinchonidine. Of the other species of Cinchona, Yellow Bark should yield 2·5 to 3·8 p.c. of Quinine; and Pale Bark 0·7 to 1·4 p.c. of alkaloids, chiefly Cinchonine or Quinidine with a little Quinine.

Action.—A general tonic, bitter stomachic, astringent, febrifuge and antiperiodic. In small doses it increases appetite, assists digestion, increases the flow of saliva and the gastric juice. It stimulates the heart and increases the arterial tension. If continued for a long time it acts as a gastric irritant, impairs digestion, produces gastric catarrh and even constipation. In large doses it causes flatulence, eructation, rise of body-heat with chill and fever. In large doses it directly acts on the cardiac ganglia, slows the pulse-beat and lowers the arterial tension. It is a protoplasmic poison. It prevents the development of plasmodium and hence the most important agent in malaria. It becomes rapidly diffused. In the blood it increases the number of white corpuscles, but prevents or arrests their movement; it lessons oxidation and in fever it lessens the body heat. It lessens the size of the spleen when enlarged from fever. As an antiseptic it is an active destroyer of low organisms (1 in 500), it destroys fungi, checks fermentation and putrefactive decomposition of uric acid, but not of urea. In the urine it lessens the excretion. It often acts as uterine stimulant if long continued and in large doses. It produces quinism or cinchonism. In excessive doses it causes dilation of pupils, delirium and even convulsions.

Uses.—These are well-known. The barks and all preparations of Cinchona are specially valuable in intermittent fevers. They are most extensively prescribed as tonic in small doses of 1 to 3 grains in dyspepsia, gastric catarrh, adynamia and convalescence from fevers and in weak and flabby subjects. The alkaloids quinine, quinidine, cinchonidine, chinchonine are similary valuable as antipyretics. As a tonic and antiperiodic quinine stands

prominent. In doses of ten grains it is given in agues of all kinds, in whooping cough, hay-fever, enlargement of spleen, hemicrania and other neuralgic affections; and in those arising from debility its good effect is generally marked and decided. It has recently been recommended in cases of typhoid fever and in the sinking stage, combined with Port Wine it is certainly beneficial. The common dose is 1 to 2 grains three times a day dissolved in 2 to 4 minims of dilute sulphuric acid. often given in some bitter infusion such as gentian or calumba. It is also given in small-pox, septic fevers, pneumonia, acute rheumatism, acute tonsillitis, acute nasal-catarrh, pyæmia etc. In irritability of the rectum or where the patient is insensible or cannot swallow and in cases where it cannot be given by the mouth it may be injected hypodermically combined with guaiacol. Locally as an antiseptic injection it is used in cystitis; and in abscess cavities and ulcers it is used as a wash and as a gargle in sore-throat. It is a good ingredient in dentifrice. The ill effects of quinine can best be avoided by giving it dissolved in dilute hydrobromic acid. The indiscriminate use of quinine in continuous and large doses for a long time weakens the heart, produces restlessness and cachexia.

Cinnamomum Aromaticum.—See Cinnamomum Cassia.

Cinnamomum Camphora.—See Camphora Officinarum.

178. CINNAMOMUM CASSIA; C. Zeylanicum; C. Saigonicum; C. Aromaticum & C. Laurus.

(*N.O.*—LAURACEAE.)

Sans.—Gudetvak. *Pers.*—Saila-Myah; *Duk.*—Qualami. *Bom.*—Kalphah; *Arab.*—Darasini; *Chin.*—Yuh or Juh; Kevei; *Eng.*—Cinnamon; *Hind., Punj., Kash., Guz., Ben., Mah., and Can.*—Dalchin. *Tel., Tam. and Mal.*—Lowangapatta. *Malay.*—Kulit-manis. *Cing.*—Kurundo. *Burm.*—Timbotik-yobo. *Fr.*—Cannelle. *Ger.*—Zimmt. *Gr.*—Kinnamomon.

Habitat.—Indigenous to Ceylon and Southern India.

Parts Used.—The dried inner bark of the shoots from truncated stalks (Cinnamomi Cortex) and essential oil (oleum Cinnamomi, B.P.)

Constituents.—Volatile oil 2 p.c., Cinnamic acid, resin, tannin, sugar, mannit, starch, mucilage, ash, etc. Oleum Cinnamomum B. P. is distilled from the cortex and consists chiefly of cinnamic aldehyde oxidizing into resin and cinnamic acid; also cinnamyl acetate and hydro-carbon.

The different oils prepared from cinnamon are:—

(1) Oil from the bark (Ceylon).

(2) Oil from the leaves of clove-like odour called clove oil. It contains 70 to 80 p.c. of Eugenol, the remainder being cinnamic aldehyde.

(3) Oil from the root, of yellow colour and lighter than water.

The *Ceylon* variety is said to be the best, containing more sugars and aromatic principles.

Action.—The bark is carminative, antispasmodic, aromatic, stimulant, haemostatic, astringent, antiseptic and germicide. The oil has no astringency; it is a vascular

and nervine stimulant; in large doses an irritant and narcotic poison.

Uses.—The bark in *infusion*, *decoction* or *powder* or *oil* is prescribed in dyspepsia; flatulency, diarrhoea and vomiting. It is frequently employed as an adjunct to bitter tonics, purgatives and vegetable and mineral astringents. As a stimulant of the uterine muscular fibre it is employed in menorrhagia and in tedious labour due to defective uterine contractions. Powdered cinnamon in 10 to 20 grain doses is a reputed remedy given in diarrhoea and dysentery. It is also very largely used as a spice. The crystalline cinnamic acid is antitubercular and is used as injection in phthisis. A five per cent oily emulsion with yolk of egg is injected in lupus. As a powerful stimulant cinnamon is given in cramps of the stomach, enteralgia, toothache and paralysis of the tongue. The essential oil is used in flavouring sweets and confectionery and as a powerful stimulant in amenorrhoea etc; the bark chewed relieves nausea and vomiting. The oil is locally applied with much benefit in neuralgia and headache. As an antiseptic it is used as an injection in gonorrhœa; as germicide it is used internally in typhoid fever. It was also used in massive doses with success in the treatment of cancer and other microbic diseases by Dr. J. J. Carne Ross of Ancoats Hospital, Manchester. The clove oil is used externally in rheumatic pains, headache and toothache. It is a frequent ingredient of pill-masses. It strengthens the gums and perfumes the breath.

The following are a few very useful home remedies:—

(1) Take of Cinnamon powder 1 drachm, Myrobalans (*Har*) 4 drams, and water 4 ounces. Boil for 10 minutes. A good aromatic purge.

(2) Take of Cinnamon (bruised) 1 dram, Catechu 3 drams, and boiling water 10 ounces. Macerate for two hours and strain. Dose:—2 teaspoonfuls three times a day, for diarrhœa.

(3) Take of Ginger (*Soonth*) 10 grains, Cinnamon (*Dalchini*) 10 grains and Cardamoms (*Ilachi*) 10 grains. Powder them all. Dose:—1 powder before food. For dyspepsia and flatulency.

(4) Take of Cinnamon 1 dram, Cloves 10 grains and Ginger 30 grains; for one powder. Boil in one seer of water for 15 minutes. Dose:—two ounces every three hours. Good for influenza.

(5) Take of Cinnamon (*dalchini*) 1 dram, Aniseed (*sonf*) ½ dram, Liquorice (*mulathi*), Raisins without stone (*Manaka*) each 1 dram, Sweet almonds 3 drams, bitter almond without rind 1 dram and white sugar 1 dram. Powder all well together and make a pill mass. Divide into five grain pills. Dose:—one pill several times a day. Good for cough.

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179. CINNAMOMUM INERS; C. Nitidum; C. Eucalyptoides; C. Tamala.

(*N. O.*—LAURACEÆ.)

Sans.—Tejpatra; Tamalapatra. *Arab.*—Tarnelly. *Pers.*—Sazaj-i-Hindi. *Duk. & Hind.*—Jangli darchini (leaves); Tejpat *Mah.*— Ranachadal; Tejpat. *Tam.*—Kattu-kurrnap. *Mal.*—Karuntoli. *Can.*—Adavi-lavangpatte. *Burm.*—Sikeyabo.

Habitat.—Tropical and Sub-tropical Himalayas; U.P. Bengal and Burma.

Parts Used.—The leaves, bark and oil.

Constituents.—The leaves contain an essential oil, eugenol, terpene, and cinnamic aldehyde. The bark

contains an oil similar to Cinnamon oil. The root contains an oil containing eugenol, saffrol, benzaldehyde. and terpene.

Preparations—Compound powder (*Trijataka*) containing *Tajpat*, immature fruit or flower buds of cinnamon and cardamoms; compound pill containing *trijataka* 1, *pipali* 4, sugar, raisins, liquorice root each 8 parts; dose:—3 to 5 grains.

Action.—Carminative, stimulant, diuretic, diaphoretic, deobstruent and lactagogue. The oil distilled from the leaves is a powerful stimulant.

Uses.—The compound pill is used in cough, flatulence and dyspepsia. The pill is to be kept in the mouth till it is completely dissolved. The compound powder, with other carminative preparations, is given in fevers, flatulence, dyspepsia and urinary diseases. The bark is used like that of C. Cassia. The leaves are largely used as a condiment. The oil distilled from the leaves is used in flavouring sweets and confectionery.

Cinnamomum Laurus.—See Cinnamomum Cassia.

180. Cinnamomum Loureiri is a tree indigenous to Cochin China and cultivated in Southern China whose bark gives an excellent cinnamon and whose leaves are also aromatic and known as *patra* (*Hind.*—tejpath) and used as a condiment in cooking.

181, CINNAMOMUM MALABATHRUM.

(*N. O.*—LAURACEÆ.)

Sans.—Tilaka. *Eng.*—Country cinnamon. *Hind.*—Jangli-Dalchin. *Tam. and Mal.*—Ilavangam. *Can.*—Kadu dalchini. *Kon.*—Tikke.

Habitat.—The Konkans and Malabar Coast.

Parts Used.—The seeds, bark and dried buds.

Constituents—Similar to C. Iners.

Action.—Astringent, stimulant and carminative.

Uses.—The seeds bruised and mixed with honey or sugar are given to children in dysentery or coughs and combined with other ingredients in fevers. The bark is used as a condiment in curries. The inner bark when fresh has an aromatic odour and taste. The dried buds are employed with various combinations in diarrhœa, dysentery and coughs.

Cinnamomum Nitidum.—See Cinnamomum Iners.

Cinnamomum Saigonicum.—See Cinnamomum Cassia.

Cinnamomum Tamala.—See Cinnamomum Iners.

Cinnamomum Zeylanicum.—See Cinnamomum Cassia.

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182. CISSAMPELOS PEREIRA.

(*N. O.*—MENISPERMACEÆ).

Sans.—Venivel; Laghu Patha; ambostha; brihatikta, (very pungent), Rasa (juicy), Vanitiktika; Papanalil (Creeper of sin); Sriyesi (auspicious); Vriddhakarnika (long eared). *Eng.*—Velvet-leaf. *Hind.*—Harjori. *Ben.*—Aknadi. *Punj.*—Pilajur, Pilijari (root), *Duk.*—Nirvisi. *Guz.*—Karandhis. *Bom.*—Venivit; pahadvel, punmushtic. *Tam.*—Ponmootootai Vâtatirupie. *Tel.*—Pâta. *Mah.*—Pâharval, Pahadamoola. *Can.*—Padvali. *Cing.*—Diyamitta; Veni-waela, *Sind.*—Tikri; Katori.

Habitat.—Tropical and sub-tropical India from Sind and the Punjab to Ceylon.

Parts Used.—The root, bark and leaves.

Constituents.—Cissampeline or pelosine $\frac{1}{2}$ p. c., in the root. It is identical with bebeerine.

Action.—Mild stomachic, bitter tonic, diuretic and anti-lithic. It is considered to exercise an astringent and sedative action on the mucous membranes of the genito-urinary organs.

Preparations.—Decoction (1 in 20), dose.—1 to 2 ounces and Powder of root, aqueous extract, Dose.—10 to 20 grains, and liquid extract, dose—½ to 2 drams.

Uses.—It is used in fevers, diarrhoea, dysentery. dyspepsia, urinary diseases, especially in acute and chronic cystitis and catarrhal affections of the bladder. It is also used in nephritis. It is a very good substitute for pereira. It is useful in the latter stages of the bowel complaints in conjunction with aromatics. The root is applied externally in snakebites and scorpion sting. The leaves and roots are used locally in cases of unhealthy sores and sinuses. The following compound pill is useful in indigestion, colic etc.—Take of *Venivel* 4, pepper 5, asafoetida 3, and ginger (*sunta*) 6 parts. Mix and add honey to make a pill mass. Dose is 3 to 5 grains.

183. Cissempelos Hexandra or C. Hernandifolia is another member of the same species, met with from Nepal to Chittagong, having almost similar properties and use.

Cissus Adanata, C. Quadrangularis & C Setosa.—see Vitis Adanata.

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184. CITRULLUS COLOCYNTHIS.

(*N. O.*—CUCURBITACEÆ.)

Sans. and Can.—Indravaruni; Vishala; Chitrapala. *Eng.*—Colocynth, Indian wild gourd or bitter apple; bitter cucumber. *Duk., Hind., Guz. and Ben.*—Indrayan; Makal. *Tel.*—Eti-puchcha; Paperabudama. *Tam.*—Paedikari Attu-

tummatti. *Mal.*—Paikumatte. Katuvelleri. *Kon.*—Kavandali. *Mah.*—Kadu-indravani; Kuru-vrandawan. *Can.*—Hamekkae, Hava; Mekke-kayi. *Arab.*—Hanzal; Aulqam. *Burm.*—Kaya-si. *Cing.*—Yekka-madu. *Pers.*—Kavistetalkh.

Habitat.—Found wild in the North West, the Punjab, Sind, Central and Southern India.

Parts Used.—The fruit deprived of its rind, the root, the dried pulp of the fruit freed from seeds and also oil from seeds.

Constituents.—The pulp contains colocynthin, a glucoside, (the chief bitter principle) 14 p.c., also colocynthein (a resin), colocynthitin, pectin, gum and ash, 11 p.c. The seeds contain a fixed oil 17 p.c. albuminoids 6 p.c. and ash 3 p.c. Colocynthitin is a crystalline powder soluble in ether and insoluble in water.

Action.—Colocynth is, in moderate doses drastic hydrogogue, cathartic, and diuretic; in large doses emetic and gastro-intestinal irritant; in small doses it is expectorant and alterative. Colocynthin is a cathartic bitter principle. Colocynthitin has a purgative action.

Preparations.—Powder, dose.—2 to 8 grains; Paste, Pill and Extract, dose.—$\frac{1}{4}$ to 2 grains; Colocynthin, dose.—1 to 6 grains, and hypodermically $\frac{1}{8}$ to $\frac{1}{4}$ grain.

Uses.—This drug (the internal pulp of the dried peeled fruit) is useful in constipation, hepatic and abdominal, visceral and also cerebral congestions, dropsy etc., and the root in jaundice, ascites, urinary diseases, rheumatism etc. A snuff of the powdered root is irritating to the eyes and nostrils. It is useful in biliousness, constipation, fever and worms; the juice of the fruit mixed with sugar is a household remedy in dropsy. The root is given in the abdominal enlargements and in cough

and asthmatic attacks of children; a poultice of the root is said to be useful in inflammation of the breasts. The *oil* from the seed is used for snake-bites, scorpion-stings, any bowel complaints, epilepsy and also for the growth and blackening of the hair. The fruit or root with or without nux-vomica is rubbed into a *paste* with water and applied to boils and pimples. In minute doses it is useful in colic, neuralgia and sciatica and also to relieve pain of glaucoma. In rheumatism equal parts of the root and long-pepper are given in pill. A *paste* of the root is applied to the enlarged abdomen of children. The *powder* is often used as an insecticide. The *extract* should never be given without some aromatic to correct its griping tendency. It is usually combined with remedies like hyoscyamus to prevent griping. It should be avoided in pregnancy and in irritable conditions of the intestinal canal.

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185. CITRULLUS VULGARIS, Var.—C. Fistulosus

(*N. O.*—CUCURBITACEÆ.)

Sans.—Chaya-pula: Kuttoowombi. *Arab.*—Belikh Zichi. *Mal.*—Mandeki-patak. *Guz.*—Karigu. *Tel.*—Darbujc. *Hind*—Turbuz: Jamauka. *Ben.*—Turmuj. *Bom. and Mah.*—Kalingad. *Tam.*—Pitchaphalam. *Eng.*—Water melon. *Punj.*—Tandur. *Fr.*—Melond'eau pasteque. *Burm.*—Pha-rai. *Cing.*—Pilchagnadi; Komardu. *Ger.*—Wassermalone.

Habitat.—Cultivated throughout India.

Parts Used.—The seeds (deprived of testa) and the juice or the pulp of the fruit.

Constituents:—The seeds yield a fixed oil and proteids.

Action.—The seeds are cooling, demulcent, diuretic, vermifuge and nutritive. The pulp is cooling and diuretic.

Preparations.—Cold Infusion (1 in 10), dose.—2 to 4 drachms.

Uses.—The juice is useful in quenching thirst; it is also used as an antiseptic in typhus fever. With cumin and sugar the juice is used as a cooling drink in strangury and affections of urinary organs such as gonorrhoea etc., also in hepatic congestion and intestinal catarrh.

The bitter water-melon is in Sindh known as *Kirbut* and is used as a purgative medicine.

Citrus Acida.—See Citrus Bergamia.

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186 CITRUS AURANTIUM C. Bigaradia, C. Vulgaris.

(*N. O.*—AURANTIACEÆ).

Sans.—Swadu-naringa. Nagranga. *Eng.*—Sweet orange *Hind & Duk.*—Naringi. *Ben.*—Kamla-neboo. *Tel.*—Gajanimma; Narangamu. *Tam.*—Narangam ; Kamalaranj *Can.*—Kittale. *Mal.*—Madhuranârakam. *Kon.*—Sonnaringa. *Guz.* & *Mah.*—Suntra. *Uriya.*—Santala *Arab.*—Naranj. *Burm.*—Lieng-mau ; Sung-Zen. *Chin.*—Kan ; Kiuh. *Cing.*—Narangka. *Malay.*—Simao.

Habitat.—Northern India ; its different varieties are grown all over India chiefly in the warmer moist regions. It was introduced from China by the Portuguese. *Kamalaneboo* is the variety grown in Bengal. The variety grown in the plains has an acid taste ; it is called *Naringa.*

Parts Used.—The rind (the fresh and the dried outer parts of the pericarp), flowers and the volatile oil distilled from fresh flowers.

Constituents.—The rind of the fruit contains a volatile oil, isomeric with oil of turpentine, gum-resin, a fixed oil, which consists of a terpene, dextro-rotatory limonene, three glucosides—hesperidin, isohesperidin, aurantiamarin a bitter crystalline principle, tannin, ash, 4 to 5 p. c. The flowers and rind of the fresh fruit contain a volatile oil called oil of neroli, a fragrant yellowish liquid of a bitter aromatic taste, soluble in alcohol, 1 to 1. It gives the peculiar odour to Eau de-cologne or to Spiritus Odoratus; dose—1 to 3 minims. The leaves and young unripe fruit contain a volatile oil called the oil of orange leaf or neroli petit grain or essence de petit-grain. This oil contains limonene 20 p.c, nerolol 30 p.c., nerolyl-acetate 40 p c., geraniol 3 p c., The juice of the orange contains principally of mucilage, sugar, citric acid, and inorganic salts such as citrate of potash (2.3 p.c.)

Action.—The dried peel or rind is aromatic, stomachic, tonic and astringent and a mild carminative. The oil obtained from the rind is internally stomachic and externally stimulating. The oil distilled from the flowers is not only a perfume but also antispasmodic and anodyne. The orange water is stimulating and refreshing. The juice is refrigerent and stomachic. The orange is one of those fruits which are rich in vitamines, which are supposed to help the digestion of other foods.

Uses.—Orange is the safest of the acid fruits. It is a blood purifier and appetiser. Taken at meals it is said to be most useful for bilious subjects and also for those with a tendency to scurvy. The juice is peculiarly grateful to invalids especially those suffering from coughs, bronchitis, diabetes, liver and heart troubles. To the diabetics the laevulose which the orange contains is considered beneficial.

The celluiar pulp in which it is enclosed is indigestible and should therefore be rejected. The juice is valuable in bilious affections and stops bilious diarrhoea. The juice given to babies with the milk corrects stomach disorders. For children suffering from anaemia, nervous debility, neurasthenia, rickets etc. fresh expressed grape juice and orange juice make an excellent tonic. The dried orange peel or rind is valuable in checking vomiting and preventing worms; it is generally used in the form of *tincture* or *infusion* which is usually employed in combination with stronger bitters such as gentian and quinine. It is useful in atonic dyspepsia and general debility. The infusion makes one of the best vehicles for the administration of Epsom and other neutral salts which it renders less offensive to the palate and stomach. Orange *marmalade* upon bread is a good breakfast diet for dyspeptic patients and the *confection* of orange peelin doses of 1 to 4 drachms may also be taken with advantage. The fresh rind of the fruit is rubbed on the face by people suffering from acme, and also on the part affected with eczema. The fruit is also used in the form of sauce, cream, jelly, honey etc. Water distilled from the orange *flowers* is a stimulant and refreshing drink usefully employed in nervous and hysterical cases. The finest quality is that distilled from the petals of the bitter orange. It is invaluable in scurvy. It and the *syrup* of orange flowers are also very frequently used as pleasant flavouring agents. The *rind pulverised* and added to magnesia and rhubarb affords a grateful tonic to the stomach in gout aad dyspepsia. The *oil* obtained from the rind and flowers may be taken as a stomachic on sugar in doses of from 1 to 3 drops; it is also used for flavouring. *Externally* it forms

an excellent stimulating *liniment*, useful in gout, rheumatism, etc. The roasted pulp is an excellent application to foetid ulcers. Orange *poultice* is recommended in psoriasis etc. Orange flowers and their distilled oil and waters are chiefly used as perfumes; the orange-water is given in Europe for hysteria in doses of from 1 to 2 ounces.

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187. CITRUS BERGAMIA.
or Citrus Acida.

(*N. O.*—AURANTIACEAE.)

Sans.—Jambha, Jambeeram. *Eng.*—Acid Lime, Bergamotte, the sour-lime of India. *Hind. & Duk.*—Limu, Neemboo. *Ben.*—Neboo. *Kash.*—Niumb. *Punj. & Guz.*—Limbu. *Mah.*—Limboo. *Tel.*—Nimmapandu. *Tam.*—Elumichhai. *Can.*—Cherunaranga; Limbe. *Mal.*—Cherunarakam. *Kon.*—Nimboovo. *Cing.*—Dehi. *Burm.*—Samyasi.

Habitat.—Several varieties are indigenous to the Himalayas and largely cultivated in Upper India and Bengal.

Parts Used.—The fruit, its juice and its oils from the rind and the leaves aud flowers.

Constituents.—Lemon juice contains Citric acid 7-10 p.c., phosphoric and malic acids, also citrates of potassium and other bases, sugar, mucilage and ashes. Lemon peel contains a volatile oil hesperidin 5 to 8 p. c, a bitter crystalline glucoside, chiefly in the white of the rind and ash 4 p.c. Hesperidin is sparingly soluble in boiling water and ether, readily soluble in hot acetic acid, also in alkaline solutions.

Action.—The fruit is refrigerant; its juice is antiscorbutic, due to the presence of Citric acid. The juice

taken internally enters the blood as alkaline citrates, potassium salts and phosphoric acid. The citrates are partly oxidised into carbonic acid and water. The potassium salts and phosphoric acid act upon the red corpuscles. They precipitate uric acid and thus promote the formation of calculi. If long continued the juice or citric acid impairs digestion and impoverishes the blood. It is supposed to dissolve organic matters in the system ; hence used in the treatment of atheroma. Citric acid is a natural antiseptic against fermentation in the stomach or bowels ; it acts as a germicide.

Uses.—The *juice* of the fruit in doses of four to six drachms is employed as a very useful refrigerant drink in small-pox, measles, scarlatina and other forms of fever where there is a very hot dry skin and much thirst. It may also be taken with advantage in cases of haemorrhage from the lungs, stomach, bowels, uterus, kidney and other internal organs. It is also useful in rheumatism. It is a most agreeable acid with which pleasant effervescing draughts and beverages are made. The juice is not only a curative in scurvy, but it is also preventive. A drink made of the juice 1 in 8 of water with a little sugar added and given twice daily is useful in scurvy. It is therefore most valuable for seamen, emigrants and others who undertake long sea-voyages. Hot lemon-juice is useful in colds and mild forms of influenza ; it is said to be also a preventive of influenza and of any tendency to pneumonia. Lime juice taken in half ounce dose allays hysterical palpitation of the heart. The juice of half a lemon in a little water, taken in cases of heartburn relieves it. Lime juice is most useful in dysentery with sloughing of the mucous membranes. Twelve ounces a day have been

given with success in a hopeless case. Lime-juice diluted with an equal quantity of water forms an excellent gargle useful in cases of scorbutic and other ulcerations of the mouth and sponginess of the gums. Diluted lime-juice is found useful in cholera and in cases of typhoid fever as a mild germicide. Limejuice added to strong black coffee without milk is said to cure malarial attacks. A squeeze of limejuice added to sauces, soups, gravies, or stews after cooking improves the flavour and is a great help to digestion. *Lemonade* or orangeale made of these citrus fruits or the fruits in their natural state are valuable for those suffering from gout, rheumatism, lumbago, sciatica, neuralgia etc., as they diminish the acidity of the blood, the citric acid being converted into alkaline carbonate in the blood. A glass of plain lemonade without the addition of sugar taken hot or cold before breakfast and at bedtime is an excellent cleanser of the stomach and bowels, having a gentle laxative effect. For a bad cold the juice of two lemons in a pint of boiling water sweetened to taste and taken at bed time acts like magic. A drachm each of lemon-juice and water with two drachms of sugar added makes an excellent linctus to relieve vomiting and dyspepsia. In diabetes weak lemonade is preferred to plain water for allaying the great thirst; like other fluids in this disease it is better taken during the intervals between than at meals. The fruit eaten daily with salt is said to be a remedy of great value in enlargement of the spleen. But in cases of acid dyspepsia and gastric trouble the lemon should be avoided. Lemon juice with an equal quantity of olive oil, beaten with an egg-beater or with a fork is said to make a good substitute for emulsion of cod-liver oil.

In poisoning with croton-oil seeds, castor-oil seeds, the physic nut and the fresh root of the bitter cassava, mandioc or tapioca plant, a drink of limejuice 4 or 5 ounces at a time diluted with an equal quantity of *congi* or plain water gives immediate relief to the purging, vomiting and other urgent symptoms. It is an antidote which should always be first tried; it seldom fails to afford more or less relief. A full dose of castor-oil should be subsequently given. Lemonjuice, ginger juice, rock-salt, black salt and *sonchal* salt in equal parts mixed together and warmed, is used as a *snuff* for promoting discharge of phlegm in fevers complicated with pain in the head, throat and chest.

Externally for relieving the irritation etc., of mosquito bites, chilblains etc., the local application of lime juice often proves more effectual than anything else. Applied to the surface at nights before going to bed it is believed also to afford protection from the attacks of mosquitoes. For pains such as neuralgia, backache etc, the parts are rubbed with a portion of cut lemon. Rubbed on the scalp it is said to remove dandruff. A local application made of lime juice 5, *javakhara* (impure carbonate of potash) 4, copper sulphate 3 and borax 4 parts, is useful for warts and tumours. The *oil* expressed from the rind is called Bergamot oil. the *essential oil* of the leaves and flowers obtained by distillation is used for adulterating Bergamot oil. Both these oils are successful as stimulating *liniments*.

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188. CITRUS DECUMANA.

(*N. O.*—RUTACEÆ).

Eng.—Pomela or Shaddoc—Pumel *Hind.*—Sadaphal, Batavi nebu, Chakot. *Duk.*—Mahanimbu. *Ben.*—Bator-

nebu. *Punj.*—Chakotra. *Sind.*—Bijore. *Guz.*—Obukotru *Bom.*—Panus popnus. *Mah.*—Papnassa. *Tam.*—Bombalinas, pampalienaram. *Tel.*—Edapandu. *Can.*—Sakotra hannu.

Habitat.—Cultivated in India; Originally brought from Batavia.

Parts Used.—The fruit and leaves.

Constituents.—The fruit contains sugar and citric acid with much essential oil in the peel.

Action.—The fruit which is often very large, larger than a man's head is nutritive and refrigerant; its rind and the epicarp of it are aromatic. The vesicular pulp is acid.

Uses.—The *rind* which is spongy is used by some in Bombay for making "bitters" like Angustura bitters for mixing drops of it with sherry as a drink before dinner. The *leaves* are said to be useful in epilepsy, chorea and convulsive cough.

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189. CITRUS LIMETTA.

(*N.O.*—RUTACEAE.)

Sans.—Madhu-Karkatika. *Hind.*—Mitha-amritphal. *Ben.*—Mitha-nebu. *Punj.*—Mitha-nimbu. *Guz.*—Mithalimbu. *Tam.*—Elemichcham. *Tel.*—Gajanimma. *Mah.*—Sâkernimbu; god-nimbu. *Mal.*—Elumitchanârakam.

Habitat.—Cultivated in most parts of India.

Action & Uses.—The fruit is extensively used as refrigerant in fevers and jaundice.

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190 CITRUS LIMONUM.—(See also C. Acida).

(*N. O.*—RUTACEAE.)

Sans.—Limpaka; Mahajambiram; Nimbaka; Vijapura. *Hind & Duk.*—Jambira; Paharikaghju; Pahadi-nimbu. *Ben.*—Karnanebu; gora-nebu. *Punj.*—Khuttia; Gulgul. *Guz.*—

Motunimbu. *Mah*,—Thorla-limbu. *Tam.*—Periya climichcham. *Tel.*—Peddanimba. *Can.*—Dodda nimbe hannu.

Habitat.—Cultivated in India.

Parts Used.—Rind of the ripe fruit (Limonis Cortex, officinal), essential oil of the rind (oleum Limonis) and expressed juice of the ripe fruit (Succus Limonis.)

Action.—The rind is stomachic and carminative. Oil of Lemon obtained either by distillation or by simple expression of the finely grated rind is carminative in doses of from 2 to 4 drops, but is rarely employed in this form. Lemon juice the expressed strained juice of the ripe fruit is a valuable antiscorbutic and refrigerant, primarily anti-alkaline and secondarily ant-acid. The bark is used as a febrifuge and the seeds as a vermifuge.

Uses.—This is much used as a sauce by Indians; a *pickle* of this fruit in its own juice and salt is a popular and effectual remedy for indigestion caused by excess in eating or by indigestible articles of food. The *rind* is principally employed as a flavouring agent. The *oil* is used as a local application in some forms of ophthalmia, but with doubtful results. *Lemon oil mixed with glycerine* is applied to the eruption of acne, to the pruritus of the vulva and scrotum, to sunburns etc. Lemon oil is applied te check post partum haemorrhage. In rheumatic affections such as pleurodynia, sciatica, lumbago, pain in the hip-joints etc., the administration of *lemon-juice* with the addition of Yavakshara (impure carbonate of potash) and honey is recommended by Sarangadhara. Lemon juice and gun-powder is applied topically for scabies. The *juice of the baked lemon* is an excellent remedy for cough when mixed with an equal quantity of sugar or honey and taken in tea-spoonful doses. A *decoction of the*

lemon (one in 3 teacupfuls of water reduced by boiling to one cupful and allowed to stand all night in the open air, strained and taken the first thing in the morning) is said to be a very valuable remedy in the treatment of Ague. *Fresh lemon juice* is recommended to be taken in the evening for the relief of dyspepsia with vomiting, and bilious headaches. Preserved with sugar or honey lemons are recommended for sore throat and are considered to act as detergent; they are administered before purgatives to prepare the body for them and afterwards to check excessive action.

191 CITRUS MEDICA.

(*N. O.*—AURANTIACEAE)

Sans.—Karuna; Mahalunga; Matulang. *Eng.*—Citron. *Hind.*—Maphal. *Ben.*—Chholongo nebu. *Mah. & Can.*—Madala. *Tel.*—Madeephalamu. *Mal.*—Madalanarakam. *Kon.*—Mavalinga. *Punj.*—Bajauri-nimbu. *Guz.*—Balank.

Habitat.—It is a garden plant chiefly cultivated for its valuable fruit and met with chiefly in the South west of India.

Parts Used.—Rind, juice and oil.

Constituents—Similar to C. Bergamia or C. Acida. The oil is obtained from the rind by distillation and by expression. The expressed oil is pale-yellow, fragrant, aromatic, bitter, soluble in alcohol 1 in 3. It contains citrene or limonene 76 p. c., citrol 7-8 p. c., cymene and citronellal. Dose.—$\frac{1}{2}$ to 3 minims.

Action.—The fruit is an expellant of poisons. The yellow pulp is an excellent aromatic and stomachic. The pulp is described as cold and dry if acid, but cold and moist if sweet. The rind is hot, dry and tonic, and is an antiscorbutic. The distilled water of the fruit is sedative.

The seeds, leaves and flowers are hot and dry. The juice is refrigerant, astringent and digestive.

Uses.—Its juice makes a pleasant refrigerant drink in allaying febrile heat and thirst, and checks bilious vomiting. It is useful in bilious and remittent fevers when combined with port wine and cinchona bark. The rind is made into an excellent marmalade, its preserve in sugar or honey is used in dysentery. It is also made into a pickle which is useful as an appetiser in various kind of fevers, dyspepsia and inflammatory affections. The rind if steeped in a vessel of wine is said to convert it into vinegar. The extract of cidrat is the oil of citron dissolved in spirits to which bergamot is sometimes added. The essential oil extracted by means of sweet oil from the powdered rind is used as a stimulating liniment. The essential oil of flowers and leaves extracted in the same way is considered to have the same properties.

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192. CLEMATIS TRILOBA.

(*N. O.*—RANUNCULACEAE.)

Sans.—Laghukarni. *Mah. & Guz.*—Ranjai. *Hind.*—Moravela (small leaved or light leaved).

Habitat.—Mountains of Western India and of the Deccan; an extensive climber. Many other species of Clematis such as C. Nepalensis., C. Vitalba etc., grow on the temperate Himalaya, but do not appear to be used medicinally.

Parts Used.—The plant (leaves.)

Preparation.—Infusion (1 in 20), dose:—1 to 2 ounces.

Action.—The leaves are alterative, acrid and sedative.

Uses.—*Infusion of the leaves* is employed in blood-diseases such as syphilis, scrofula, leprosy and in chronic fevers. Some Vaidyas regard the whole plant as a purgative. The *juice* of the leaves combined with that of the leaves of Holarrhina Antidysenterica is dropped into the eye for the relief of pain in Staphyloma, about two drops being used.

193. **Cleome Dodecandra** (*Fr* :—Cleome-a-douze-etamines) is used as a vermifuge.

194. **Cleome Felina** (*Fr* :—Cleome-de-Inde) mixed with milk and sugar is employed in epistaxis.

195. **Cleome Pentaphylla** (*Sans* :—Arkapushpi. *Eng*.—Spider flower. *Fr*.—Cleome-a-cing-feuiles. *Hind*.—Arkahuli. *Guz*.—Kharner.) is a native of Indus valley and is used as a sudorific and stimulant.

196. CLEOME VISCOSA or C. Icosandra.

(*N. O.* —CAPPARIDEAE.)

Sans.—Karnaspota ; Arkakanta ; Adityabhakta. *Eng*.—Wild or Dog mustard. Sticky Cleome. *Sind*.—Kathori. *Arab*.—Bazar-ul-Banja ; Chamara. *Hind*.—Jangli Hurhur. *Ben*.—Tilparni ; Hurhuria. *Tel*.—Naelavaminta ; Kukka-vaminta. *Tam*.—Nayi-velai. *Punj*.—Bogra. *Bom*.—Pivla Tilivana. *Mah*.—Kanphuta. *San*.—Kadusasiva. *Mal*.—Aryaval. *Kon*.—Sirikala. *Duk*.—Chowriajwan. *Guz*.—Tilvan ; Tinmani. *Fr*.—Herbe puante ; Brede-puante. *Port*.—Bredo-mamma.

Habitat.—A common weed found all over India and plentifully in Bengal, the Gangetic valley.

Parts Used.—The whole plant.—seeds, leaves and root.

Action.—The seeds are carminative, anthelmintic and antiseptic like mustard. The juice of the leaves is sudorific. The leaves have a pungent flavor. The bark is irritant and acrid. When cooked it loses its acrid properties. Externally it is rubefacient and vesicant.

Preparations.—Infusion (1 in 10), dose ½ to 1 ounce. The juice of leaves; poultice or paste of seeds or of the plant.

Uses.—These *seeds* are a remedy for infantile convulsions. They are regarded as an efficient substitute for mustard internally and externally. In the form of *infusion* they are employed topically to kill maggots in unhealthy sores. As anthelmintic they are used in doses of from 10 grains to 1 drachm in *powder* with sugar twice a day for two days and then followed by a dose of castor oil; they are specially useful in cases of round worms. The seeds ground into *poultice* or *paste* or being bruised with vinegar, lime-juice or hot water are applied for their rubefacient action and the *leaves* applied to boils prevent the formation of pus; and their *juice* pressed out with hot water is used as ear-drops in earache; but in cases of otorrhoea its instillation produces smarting pain; when *mixed with oil* (equal parts) it is a popular remedy, for purulent discharges from the ear; it also forms an application for recent wounds and ulcers; for this purpose leaves boiled in ghee are used. The *juice* is given internally in small quantities freely diluted with water and acts as a sudorific in fevers.

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197. CLERODENDRON INERME or C. Neriifolium.

(*N. O.*—VERBENACEAE.)

Sans.—Kundali : Kshudragnimantha. *Eng.*—Garden quinine. *Ben.*—Benjuen. *Guz.*—Dariajai. *Mah.*—Koivel ; Vanajai : Lahan-khari narval. *Hind.* Binjoma ; Sangan kuppi ; Chhoti-arni. *Duk.*—Isamdhari. *Mal.*—Nirnotijil. *Tam.*—Pinasangam koppi. *Tel.*—Pishinika ; Utichettu ; Erup-pichha. *Can.*—Naitakkile. *Fr.*—Volkameria. *Cing.*—Wael-bu-raenda.

It is called garden quinine on account of its intense bitter taste.

Habitat.—India near the sea-coast; Ceylon.

Parts Used.—The leaves and juice of the root and the leaves.

Constituents.—The leaves are mucilaginous, bitter and fragrant. They are found to contain a bitter principle similar to that found in chiretta, a fragrant stearoptin to which its apple-like odour is due; resin, gum and a brown colouring matter and ash containing a large amount of sodium chloride (24.01 p.c. of the ash.)

Preparations.—Infusion and decoction (1 in 10), dose :—½ to 1 oz; Tincture (1 in 8), dose :—½ to 1 drachm; Juice of the root and leaves, dose :—¼ to ½ ounce.

Action.—Tonic, febrifuge and alterative.

Uses.—It is given in the form of *tincture* or *decoction* in intermittent and remittent fevers ; it is used as a substitute for quinine. The *juice* of the leaves and root is employed as alterative in scrofulous and venereal diseases. A *poultice* of the leaves is applied to resolve

buboes. A bath of the leaves is recommended in mania and itches. The *root* boiled in oil is applied like *liniment* in rheumatism.

198. **Clerodendron Infortunatum** (*Sans.*—Bhandira. *Bom., Mah.* & *Can.*—Kari. *Hind.*—Bhanta. *Ben.*—Bhat.) of the same genus is an undershrub found in Central India; the leaves of which are of very disagreeable odour and are used in infusion as a bitter tonic, antiperiodic and vermifuge. The expressed juice of the leaves is said to be laxative and cholagogue. The root of this rubbed down with butter-milk is given in colic.

199. **Clerodendron Phlomoides**.—*Sans.*—Agnimantha or ganikarika. *Guz. & Hind.*—Arani. *Bom.*—Airana. *Mak.*—Takali.) also of the same Genus is found in the Gangetic valley, the juice of whose leaves is used as an alterative, and a decoction of its root which is slightly aromatic and astringent is used as a demulcent in gonorrhoea. It is also given to children during convalescence from measles. This is one of the five roots *Vrahat Panchamuli.*

200. **Clerodendron Serratifolium** (*Sans.*—Bhargi. *Hind.*—Bharangi, *Ben.*—Bamanhati. *Tam. & Mal.*—Cheruteku.) is another species of the same Genus, met with in Eastern India, especially Bengal where its root is used in the form of decoction as a remedy in asthma, bronchitis and other catarrhal affections of the lungs and the leaves are applied in the form of poultice to hasten suppuration.

Clerodendron Siphonanthus.—See Premna Herbacea.

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201. CLITORIA TERNATIA or C. Spectabilis.

(*N. O.*—LEGUMINOSÆ.)

Sans.—Ashphota: Gokarna: Aparjita: Vishnu-kranta. *Hind.*—Nili-koyala; Kava-thenthe. *Ben.*—Nila-aparajita *Mah.*—Gokurna-mula (root). *Tel.*—Dintana. *Guz.*—Garani, *Tam.*—Kodi-Kakkanam, Kavachhi, Kuruvilai. *Can.*—Shanka-puspa; Karnike; Kantisoppu. *Mal.*—Aral, Shankapuspam. *Kon.*—Shankapuspi. *Arab.*—Buzrula: Mazeriun-e-hindi. *Pers.*—Tukhm-i-bikhe-hayata. *Fr.*—Clitore-de-Ternate. *Eng.*—Butterfly-pea; Winged-leaved Clitoria; Mazerion. *Port.*—Fula-criqua.

Habitat.—A very common garden-flower plant found all over India.

Parts Used.—The root, bark, seeds and leaves.

Constituents.—The root-bark contains starch, tannin and resins. The seeds contain a fixed oil, a bitter acid resin (the active principle) tannic acid, glucose (a light brown resin) and ash 6 p.c. The testa of seeds is brittle and contains a cotyledon which is full of granular starch.

Preparations—Infusion (1 in 8), dose—1 to 2 ounces; alcoholic extract, Decoction; compound Powder, and Juice of the leaves and root.

Action.—The fresh root has an acrid bitter taste; it is described as laxative and diuretic. The seeds have a powerful cathartic action like that of jalap. The root bark is demulcent and diuretic and also laxative.

Uses.—The *seeds* roasted and *powdered* are given in doses of 30 to 60 grains in cases of ascites and enlargements of the abdominal viscera; generally administered in combination with 2 parts of cream of tartar, and 1 part of ginger to 1 part of Clitoria seed in doses of ½ to

1 drachm. They are also employed in weakness of sight, sorethroat and mucous disorders, in tumours, affections of the skin and in dropsy. One, two or more seeds, baked and then brayed in human milk or fried in ghee are given to children in colic and constipation. The *alcoholic extract of the root* is also useful in doses of 5 to 10 grains. The dose of the dry *bark in powder* is from 1 to 2 drachms. In the Konkan two tolas of the *root juice* are given in cold milk to remove the phlegm in chronic bronchitis; it causes nausea and vomiting. The *juice of the root of the white-flowered variety* is blown up the nostrils as a remedy for hemicrania. The *infusicn of the root-bark is* useful in the irritation of the bladder and urethra. The *juice of the leaves* mixed with that of green ginger is given in cases of colliquative sweating in hectic fever. Mixed with common salt it is used for appiying warm ali around the ear in cases of swelling of the neighbouring glands. The following is the preparation recommended by Chakradatta in ascites and enlargements of the abdominal viscera.—Take of the roots of Clitoria Ternatia, Pladera decussata (*Sankini*), Beliospermum Montanum (*Danti*) and Indigofera Tinctoria (*Nilini*) in equal parts; rub them together into an emulsion with water and administer with cow's urine.

202. **Clitoria Marina** (*Sveta* variety) is another species of the same Genus found in India bearing light blue flowers, used for cramps and paralysis.

Coccinia Indica—See Cephalandria Indica.

203. COCCULUS CORDIFOLIUS.

(*N.O.*—MENISPERMACEAE).

Sans.—Nirjara; Somavalli; Guloochee; Amrita; Pittagni; Bhishakpriya. *Eng.*—Heart leaved moonseed. *Mah.*—Gulvel. *Hind and Ben.*—Gulancha. *Bom.*—Ambervel Giroli. *Duk.*—Gulbel. *Guz.*—Gado. *Punj.*—Gilo Gulanch. *Kash.*—Bekhgillo. *Tel.*—Tippateego. *Burm.*—Singo mone. *Cing.*—Rasakinda. *Malay.*—Piturali. *Tam.*—Sindilkodi; Amradvalli. *Can.*—Amratavalli. *Mal.*—Chittamratam; Paiyamratam *Goa.*—Amritvel

Habitat.—A common climbing shrub growing on *nim* and other high trees in tropical Western India, Burma and Ceylon.

Parts Used.—The stem and fecula (starchy extract of *gulancha*), leaves and root.

Constituents.—The root and stem contains starchy extract, bitter principle and a trace of berberine. The leaves are highly mucilaginous.

Action.—Stomachic, bitter tonic, alterative, aphrodisiac, hepatic stimulant, antiperiodic, mild diuretic and demulcent. In large doses the root is a powerful emetic,

Preparations.—Cold infusion (one ounce of the bruised stem infused for four hours in 10 ounces of cold water), dose :—1 to 4 ounces. Tincture (1 in 8), dose ½ to 2 drachms; starchy extract or fecula; dose 5 to 20 grains. The extract is prepared by powdering the stem and washing out the starch with water and drying the sediment. The fecula is nutritious, largely given in cold fevers and seminal weakness and in urinary affections. Its preparations, especially the infusion may be given in combination with iron-preparations, like those of calumba and quassia.

Uses.—The entire plant.—stem, leaves and root are used in medicine, preferably in the fresh state; the root and stem should be collected in the hot season when the bitter principle is most abundant and concentrated. It is a very valuable tonic and is best given in infusion with or without milk; the *tincture* and *extract* especially the latter in 5 grain doses is useful in general and seminal debility, fever, jaundice, torpidity of the liver, skin diseases, secondary syphilis, rheumatism, acidity of urine and urinary diseases, some forms of dyspepsia, splenic affections, chronic gonorrhoea, leucorrhoea etc. It is used as a febrifuge and tonic in gout; combined with extract of chiretta, *vasaka*, myrobalan, *neem*, Pycrorrhiza (*kutki*), *parpâta* (Oldenlandia herbacea) all together being equal in weight to that of *Gulancha*, it is said to make a very useful compound liquid extract in various kinds of fevers. In malaria it is sometimes more efficacious than quinine. As compound tincture or infusion it is most valuable in malarial fevers with or without enlargement of liver and spleen, anaemia, dropsy &c.

The *root* is a popular remedy for snake-bite; and the *watery extract* is administered for leprosy. In the form of *decoction* or *infusion* combined with Cyperus Rotundas, ginger, sandalwood and Oldenlandia herbacea, it is given in fevers caused by cold or indigestion, especially among children. Combined with acetate of ammonia its infusion is administered in intermittent and other mild forms of fevers. It is rendered more agreeable by the addition of cinnamon, cloves and other aromatics. The dose is 2 to 4 ounces three times a day. The *juice* mixed with powdered long pepper, *pashanbhed* and honey

is a common household remedy for gonorrhoea. The *juice* forms one of the ingredients in *poushtiks* given in phthisis. The *watery extract* prepared by Hakims when pure, is white in colour and consists chiefly of starch. It is called "*Satt-gilo* or *Palo*" and is given in chronic fevers and also in diabetes. Several *oils* for external application are prepared with *gulancha* and are much used in skin diseases, rheumatic affections and other nervous complaints.—*Guduchyadi taila*; *Vrihat guduchyadi taila*; *Vata Guduchyadi taila* (Charaka). The following are a few very useful preparations containing *Gulancha*.—

1. Take of Alstonia Scholaris, *Gulancha*, leaves of Adhatoda vasaka, Cyperus rotundus, Trichosanthes Dioica, Calamus Rotung (*Vetasa*, or *Vetra*); Catechu, *neem* leaves in equal parts; and prepare a decoction; dose.—1 to 2 ounces. Useful in remittent and intermittent fevers.
2. Take of *Gulancha*, *parpata* (Hedyotis biflora) *mustaka* (Cyperus rotundus), chiretta and ginger each 1 drachm and water half a seer. Boil down to one-fourth. Useful in bilious and other fevers especially chronic fevers which have resisted other antiperiodics.
3. *Dhatreemodaka*.—Take of chebulic and emblic myrobalans, ginger, and long pepper each 1 part, watery extract of *gulancha* 4 parts, water 16 parts, Boil till reduced to one-fourth and prepare a confection with 8 parts of sugar; when of proper consistence divide the mass into boluses of 1 drachm each. Dose.—One bolus taken every morning in chronic fever with enlarged spleen, cough, loss of appetite etc. (Sarakaumudi).

4. Take of leaves of *Gulancha* 4, *Amala* (Oxalis Corniculata) 1, *Balaharda* (Chebulic myrobalan) 1, *Sunta* (dried ginger) 1 and *Pipli* 1 part. Mix and make a decoction in the usual way and then add sufficient quantity of honey. Dose :—1 to 2 drachms. Useful in remittent fevers.

5. Take of *Gulancha* 2, *apamarga* (Achyranthes Aspera) 1, *Vidanga* (Embelia Ribes) 3, *Kushta* (root of Aplotaxis auriculata) 2, *Satavari* (Asparagus Racemosus) 2, *Vacha* (Acorus Calamus) 3, *Balharda* 4 and *Sankhahuli* (Canscora decussata) 2 parts. Mix and make a powder. Dose :—grains 10 to 15. Used as a blood-purifier ; also an alterative tonic in syphilis, scrofula etc.

204. **Cocculus Leaeba**, a scandent shurb of the same Genus, found in the drier parts of Western India, the Punjab, Sindh and Carnatic valleys as well as in Afghanistan, Arabia and Persia, has bitter and antiperiodic properties, similar to those of Cocculus Cordifolia. It is known in the Punjab as *Vehri*, in Guzurat and Sindh as *Ullarbillar* and *Parvatti*.

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205. COCCULUS SUBEROSUS or C. Indicus.

(*N. O.*—MENISPERMACEÆ).

Sans.—Kakphala ; Kakanashika. *Eng.*—Indian Berry ; Fish-berry. *Punj.*—Heuber ; Netrmala. *Hind.*, *Duk.*, *Ben.* & *Tel.*—Kakmari. *Mah.*—Karwi. *Tam.*—Kakakulli, Penkottai. *Can.*—Kagemari. *Mal.*—Meenanu ; Nanjinkuru ; Pellakkaya. *Kon.*—Gardaphala. *Cing.*—Titt-taval. *Bom.*—Vatoli. *Fr.*—Coque-du-Levant. *Pers.*—Zehere ; Mahi. *Guz.*—Kakphal.

Habitat.—Found in the mountain forests of Southern and Eastern India & Burma.

Parts Used.—The fresh fruit and its alkaloid picrotoxin.

Constituents.—The berry or the dried fruit contains "picrotoxin" a bitter crystalline substance and 50 p. c. of oil. It contains other crystallizable substances which are tasteless; *Viz*:—menispermine and paramenispermine. Picrotoxin is the active principle; it is soluble in water and alkalies. It does not neutralise acids. The aqueous solution is not altered by any metallic salt or by tannin, iodic acid etc., in fact by none of the re-agents which affect the alkaloids. The solution in the latter is not precipitated by chloride of ammonium; but it reduces cupric oxide like the sugars, but to a much smaller extent than glucose.

Action.—The pericarp is said to be emetic. Picrotoxin, the active principle is a powerful poison irritating the respiratory and other centres in the medulla and producing violent spasmodic muscular contractions; *externally* it is parasiticide. The dried fruit is a powerful narcotic, and it is the source of picrotoxin. As it has exactly the opposite effects of morphia on the pressure of the blood it forms a best antidote to morphia poisoning.

Uses.—The *juice of the fresh fruit* is a good application to scabies and foul ulcers. *Picrotoxin* is a poison, and is rarely given; it is however given in the smallest doses in epilepsy, especially in the nocturnal variety; in paralysis affecting the muscles of the pharynx, of the legs sphinctor vesicae, and sphinctor ani, in chorea and in sick headache. It is, however, to check the night-sweating of

phthisis that this drug has been much used in doses of $\frac{1}{200}$ to $\frac{1}{100}$ grain, three times a day; it may be given in pills and the dose gradually increased to $\frac{1}{50}$ grain. It is used as an antidote in morphine poisoning as it prevents the paralysis of the respiratory centre in the medulla; also in chloral poisoning. *Externally*, in the form of ointment (1 grain of picrotoxin or 10 grains of the seeds to 1 drachm of ghee or *kokum* butter or vaseline or simple ointment) it is used to destroy pediculi or lice which infest the body; it is useful also in prurigo, ringworm and obstinate parasitic skin diseases. In applying this ointment or paste made of pounded seeds, which is a powerful germicide care should be taken to avoid all abraded or ulcerated surfaces on account of the danger of absorption of the poisonous principle of the seeds. In the form of an oily solution of the berries (1 drachm to 1 ounce of cocoanut oil) it is a useful external application.

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206. COCCULUS VILLOSUS.

(*N.O.*—MENISPERMACEAE).

Sans.—Jaljamni ; Patalagarudi ; Vasanavalli ; Vanatiktika. *Hind.*—Faridbel. Jamtike bel. *Ben.*—Huyer. *Mah.*—Vasanvel ; Tana, *Guz.*—Patalagalori. *Duk.*—Jamti-ka-gratta. *Tam.*—Kattuk-kodi. *Tel.*—Chipuru-tige ; Katle-ti. *Can.*—Dagadi.

Habitat.—A climber found in tropical and subtropical India.

Parts Used.--The root and leaves.

Constituents.—Resin, two principles possessing the properties of alkaloids, but differing in certain points from

each other, and an acid; resin, yellowish-green and soft, of fragrant odour like that of Tolu balsam and soluble in benzine.

Action.—The root is bitter and acrid, and alterative, laxative and demulcent in action a substitute for sarsaparilla.

Uses.—The *juice of the leaves* coagulates in water and forms a mucilage which is used *externally* as a cooling and soothing application in prurigo, eczema, impetigo etc. Sweetened with sugar, the *juice* is given in acute gonorrhoea to soothe the smarting and scalding. *Decoction of the root* (1 in 10) mixed with long-pepper and goat's milk is given in doses of two to four ounces in chronic rheumatism and syphilitic cachexia. The decoction in combination with ginger and sugar is given in cases of bilious dyspepsia and in cases of fevers with other bitters and aromatics. The *roots* rubbed with bonduc nuts in water are given for stomach ache, especially in children.

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207. COCHLOSPERMUM GOSSYPIUM or Bombax Cossypium.

(*N. O.*—BIXINEAE.)

Eng.—Golden silk cotton; yellow flowered cotton. *Duk & Hind.*—Pilikapas; gajra kumbi; katera gond (the gum). *Tam.*—Tanaku maram. *Tel.*—Kondugogue pisunu. *Mal.*—Shimae-punji. *Can.*—Burugadamara. *Cing.*—Ella-imbul. *Pers*—Katira-i-Hindi. *Arab.*—Kathira.

Habitat.—Behar, Orissa, Deccan, Garrhwal & Bundelkund.

Parts Used.—The leaves and the gum obtained from the trunk of the tree.

Constituents.—The seeds contain an oil and some saccharine matter.

Action.—The gum called Indian or Country Tragacanth, is demulcent & astringent.

Uses.—The gum is made into lozenges and mucilage. It is useful in cough, hoarse throat and scalding in the urine. Mixed with curds or whey it is largely used with great benefit in diarrhoea and dysentery. The young leaves are used to make a cooling wash for the hair.

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208 COCOS NUCIFERA.

(*N. O.*—PALMACEAE.)

Sans.—Tranaraj ; Deerghavraksha ; Sadaphala ; Rasayanataru ; Nârikela. *Eng.*—Cocoanut Palm. *Hind.*—Nariyal ; *Ben.*—Narikel. *Tel.*—Tenkayichettu. *Tam.*—Tengu. *Can.*—Tenginamara. *Mal.*—Ten. *Kon.*—Nâral-maddo. *Fr.*—Cocotier. *Ger.*—Achte-kokospalme. *Arab.*—Shajratuna-narajila. *Pers.*—Drhakht-narajila ; Drakht-i-badinja.

Habitat.—This graceful palm rising from 60 to 90 feet is extensively cultivated in Southern India and Ceylon; it is not found in the Northern Provinces, but is plentiful in Eastern Bengal, Burma towards the sea-coast, in Malabar and Coromandal Coasts and the islands of the Indian Archipelago.

Parts Used.—The flowers, root, fruit, oil and ash. The fruit contains shell, juice and kernel.

Constituents.—The fresh kernel contains nitrogenous substances, fat, lignin, ash, palm sugar (glucose and cane sugar) and inorganic substances. The milk in the cocoanut contains sugar (mannitol), gum, albumen, tartaric acid and mineral water. The ashes of the leaves

contain a good deal of potash. The cocoanut oil contains free caprylic acid in addition to glycerides of lauric, myristic, palmitic and stearic acids.

Action.—Cocoanut milk is refrigerant, nutrient aperient, diuretic and anthelmintic. Cocoanut water is cooling, refrigerant, demulcent, and in large doses aperient. The fresh kernel or the tender pulp is nourishing, cooling diuretic and refrigerating. The pulp of the ripe fruit is hard and indigestible. The terminal buds are nourishing and digestive. Their fresh juice is refrigerant and diuretic. The fermented juice constitutes the spirituous liquor called toddy; it is refreshing and laxative. The oil from the shell is rubefacient and antiseptic and used externally. The root of the cocoanut is used as a diuretic.

Uses.—The whole tree is of great economical value to the people of the sea-board districts almost every part being utilised. The *juice* extracted from the flowering spikes is made into a palm wine or toddy and also vinegar and a coarse sugar somewhat different from cane-sugar; when fermented and distilled a clean spirit is obtained, which is suitable for pharmaceutical purposes. The *unfermented juice* taken twice or thrice weekly during pregnancy is said to have marked effect on the colour of the infant; it is said to be born of a fair complexion; *i. e.* if of dark parents, comparatively fair; if of lighter colured parents the offspring generally assumes European complexion. The *milk of the kernel* mixed with *Kalijeera* is locally applied to freckles. From the edible portions of *kernel of the nut* three oils known as *cobrel*, *avel*, and *muthel* are prepared, And a *tarry oil* is

prepared from the shell of the nut, which is used only externally in the treatment of ringworm. The clear shell or portions of it are burnt in a fire and while red-hot, covered by a stone-cup. The fluid deposited in the interior of the cup is the oil or tar from the shell; it is a good substitute for acetic acid and creosote. The *milk of the fresh kernel* is useful in debility, incipient phthisis and cachexia, in doses of 4 to 8 ounces thrice daily; in large doses it is aperient. The *water of the unripe fruit* is useful in thirst, fever and urinary disorders. The *fresh oil* prepared by boiling the milk of cocoanut is a useful application in baldness as it promotes the growth of hair and also for burns. The cocoanut oil prepared from fresh pulp is used as a substitute for Cod liver oil in American hospitals in wasting and pulmonary diseases of children; the dose is from 20 to 30 minims gradually increased to a drachm thrice daily; the only drawback is its indigestibility. It is the oleine obtained by pressure, refined by being treated with alkalies and then repeatedly washed and distilled with water. The *milk of the green fruit* is a cooling refrigerant drink, useful in allaying urinary irritation. It allays vomiting in bilious fevers. The *root* of the cocoanut is used in uterine diseases. The *ashes of the leaves* are used in medicine. In South Africa the cocoanut is said to be a popular remedy for tape-worm; the almond scraped out from the interior of a cocoanut is administered and it is followed in three hours by a dose of castor oil. The worm is expelled in two hours afterwards. The green husk of the cocoanut is made into preserves and

sweetmeats. The kernel of the nut is generally used for eating, for curry and for extracting milk. The dried flesh (*copra*) is used for making butter, margarine etc. The residue or oil cake left after extracting the oil from the *copra* is a good manure and food for cattle. The *expressed oil* is an ingredient in the preparation of curries. It is also used in the manufacture of cosmetics and other medicinal preparations. *Narikelakhanda* is a useful confection and is prepared thus :—Take of the pounded pulp of cocoanut, half a seer, fry it in eight tolas of clarified butter and afterwards boil in four seers of cocoanut water till reduced to a syrupy consistence. Now add coriander, long pepper, bamboo manna, cumin seeds, nigella seeds, cardamoms, cinnamon, *tejpatra*, the tubers of Cyperus rotundus (*mustaka*), and the flowers of Mesua ferrea (*nagakesara*) one tola each in fine owder and prepare a confection. Dose:— two to four tolas, in dyspepsia and consumption.

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209 COFFEA ARABICA.

(*N. O.*—RUBIACEAE.)

Sans.—Mlechca-phala. *Eng. & Ben.*—Coffee. *Hind.*—Kafi, Bun. *Fr.*—Cafeie-d' Arabie. *Ger.*—Arabischer Kaffebaum *Arab.*—Kahwa. *Can, Guz, & Mah.*—Caffi. *Tel.*—Kapivittulu *Tam.*—Kapikottai. *Kon.*—Bunna. *Mal.*—Bannu.

Habitat.—Coffea Arabica and several other species of the plant are cultivated in Southern India, Mysore and Coorg.

Parts Used.—The coffee beans, or the dried seeds of coffee.

Constituents.—Caffeine (1 to 3 p.c.), proteids (11 to 14 p.c.). sugar, legumin (10 p.c.), glucose, dextrine (15 p.c.) Coffeo-tannic acid (1 to 2 p.c.), fat, volatile oil, and ash (3 to 5 p.c.) consisting of alkaline carbonates and phosphates. The dried seeds of Coffee beans yield the crystalline principle *Caffeine* which is identical with the *Theine* contained in tea. By the roasting process a volatile oil called *Caffeol* is developed.

Action.—Cerebro-spinal, respiratory, gastric and renal stimulant; antisoporific, efficient diuretic and anti-lithic; assists assimilation and digestion, promotes intestinal peristalsis, lessens tissue waste and decreases the excretion of urea. It reduces the amount of blood circulating in the brain, and brings it to the nerve-tissues under increased pressure. It allays the sense of prolonged mental fatigue and keeps off sleep for some time. It increases reflex action and mental activity. Given in excess it disorders digestion, as it retards salivary and gastric functions; it leads to headache, vertigo and palpitation of the heart, great restlessness, convulsions and paralysis. Coffee is more stimulating but less sustaining than cocoa. Coffee berries possess febrifuge properties in their raw state. It is contraindicated to children as it produces sleeplessness and thereby adversely affects their growth. Among adults it hastens old age processes & lessens the length of life by disturbing metabolism.

"Compared with tea, coffee has only a slight retarding influence on salivary digestion, but an equally detrimental effect on gastric digestion. As a stimulant it effects more directly the central nervous system: the heart action is considerably increased in rate as well as strength. In-

directly, this results in an increased activity of the kidneys. The respiration is deepened and the cerebral centres excited. For this reason it often proves useful in cases of opium and alcoholic poisoning. In some persons these effects are very mild; in others, they are severe, producing nervousness and insomnia, and coffee should then be withheld. It removes the sensation of fatigue for which reason it is used by many nurses when on night duty. It should never be given to children."—(Pattee's Practical Dietetics.)

Uses.—Coffee is a palliative in spasmodic asthma, in whooping cough, delirium tremens, hysterical affections and in the palpitation of the heart; it is highly recommended in cholera infantum; successful in chronic diarrhoea. Coffee and caffeine have been used as diuretics in dropsy. It is said that, in early stages of typhoid fever, coffee is almost a specific. In the French Colonies where coffee is more used than in English, as well as in Turkey, where it is the principal beverage, not only gravel but gout is scarcely known. *Roasted coffee* has the disinfectant and deodorant properties. A *strong infusion* of black coffee is useful as an antisoporific in cases of poisoning such as by opium, alcohol and other stupefying or narcotic poisons. Given in teaspoonful doses frequently at short intervals to patients after surgical operations it checks vomiting. It is a good vehicle for the administration of quinine and sulphate of magnesia as it conceals the bitter and nauseous tastes of those medicines. A strong cup of coffee is considered a good protection from the effects of Malaria. In their raw state coffee berries are prescribed for hemicrania and intermittent fevers.

210. **Coffea Bengalensis**, a species of the same Natural Order, growing wild, and cultivated in the mountainous regions of Sylhet and Nepal, has properties and uses similar to those of the above species. Their seeds are found to contain on analysis about 34 p c. of cellulose, 12 p.c. of water, 10 to 13 p.c. of fatty matter, 15·5 p.c. of glucose, 10 p.c. of legumin, 3·5 p.c. of chlorogenate of potassium and caffeine, a small percentage of oil and mineral substances, and Caffeotannic and Caffeic acids. An empyreumatic oil is developed in roasting the seeds.

Colchicum Illyrium.—See Harmodactylus Gol

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211. COLCHICUM LUTEUM.

(*N.O.*—MELANTHACEAE OR COLCHICACEAE).

Sans.—Hiranya-tuttha ; Tutham ; Tuthanjana. *Hind.*—Haran Tutiya. *Eng.*—Golden collyrium. *Cash*—Surinjan.

Habitat.—Afghanistan, Punjab, Cashmere, North India.

Parts Used.—Solid extract prepared from the corm or bulbous root, and called Haran-tuttia.

Constituents.—The seeds and roots both are found to contain Colchicine readily soluble in water and spirit, decomposing into colchiceine, tannic and gallic acids, starch, sugar, gum, etc. It is *haran-tutiya*, a medicine of great repute:—dry extract prepared by Afghans out of the bulbous roots sold in small pieces of a dark brown colour.

Preparations.—Extract, dose—$\frac{1}{4}$ to 1 grain.

Action & Uses.—Alterative; chiefly used in rheumatism, gout etc.

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212. COLEUS AROMATICUS—or C. Amboinicus or C. Carnosus.

(*N. O.*—LABIATAE)

Sans.—Pashanabhedi ; Asmantaka ; Himsagar. *Eng.*—Country borage. *Hind.*—Patherchur ; Amroda. *Ben.*—Patharkuchi; Amlakuchi. *Tam.*—Kurpurvalli. *Guz.*—Ovapana. *Mah.*—Pan-Ova.

Habitat.—This grassy plant is found or cultivated throughout India, Ceylon and Moluccas.

Parts Used.—The leaves.

Preparations.—The juice of leaves ; dose.—½ to 1 drachm.

Action.—Antispasmodic, antilithic, cathartic, stimulant and stomachic.

Uses.—The *juice* mixed with sugar is given to children in colic ; in asthma, chronic cough, strangury, calculus, gonorrhœa, piles and dyspepsia. The crushed *leaves* are used as a local application to the head in headache and to relieve the pain and irritation caused by the stings of centipedes. The *expressed juice* is applied round the orbit to relieve the pain in conjunctivitis. It is also given in chronic cough, fever, epilepsy and other convulsive affections. This is called *Ovapana* from the aromatic taste and odour of its leaves resembling those of Ptychotis ajowan. A favourite Indian dish called *Bajeh* is made of the chopped leaves.

213. Coleus Malabaricus is a species found in Malabar and in the East Indies with aromatic leaves. Its root is used in dysentery and stomach complaints.

214. Coleus Scutellarioides is another species met with in Central India, the root of which is, like the above used in dysentery and digestive disorders.

Coleus Spicatus.—See Anisochilus Carnosus.

Colocasia Antiquoram.—(*Fr.*—Colocasie de l'Inde. *Ger.*—Schild formiger Arum)—See Arum Colocasia.

Colocasia Indica.—See Alocasia Indica.

215. **Colycopterus Floribundo** (*Mal.*—Chempullanhi) belonging to Natural Order Combretaceae is a species found in Malabar & South India. The tender leaves of this plant have laxative and anthelmintic properties. The copper-coloured tender leaves ground into paste and made into pills of five grains each, are given to patients to cause the expulsion of round worms. On chemical examination of an extract of the leaves, colour reactions were obtained which resembled those of Santonin. This plant is known also by the name of Combretum Extensum. Rao Bahadur Dr. M. C. Koman says.—"I have not the slightest doubt that it will prove to be a good anthelmintic and a very efficient substitute for Santonin, especially as the latter is now sold at an exorbitant price."

Commiphora Mukul or C. Africana.—See Balsamodendron Mukul.

Commiphora Myrrha.—See Balsamodendron Myrrha.

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216. CONOCARPUS LATIFOLIUS or Anogeissus Latifolia.

(*N. O.*—COMBRETACEAE.)

Sans.—Madhura-tvacha ; Vakavraksha : Dhavala. *Eng.*—Crane tree. *Hind*—Dhaura. *Tam.*—Vellanaga. *Tel.*—Yellamuddi ; Cheriman Shertinamu. *Mah. & Guz.*—Dhavada. *Can.*—Dinduga : Dindlu ; Bejulu.

The fruit resembles the head of a crane (Vâka). A large amount of gum flows from it like milk from the breast (dhava—to flow).

Habitat.—Himalayas to Ceylon.

Parts Used.—The gum and the leaves.

Constituents.—The leaves contain tannic acid 15·5 p. c. The ash contains carbonate of potash.

Action.—Demulcent and astringent.

Preparations & Uses.—Decoction of the leaves (1 to 10), is given in doses of ½ to 1 ounce in diarrhoea and gonorrhœa. The gum is used as a substitute for gum-arabic and gum-acacia.

Convolvulus Argentens & C. Nervosus or C. Speciosa.—See Argyreia Speciosa.

Convolvulus Paniculata.—See Ipomoea Digitata.

217. COPTIS-TEETA.

(*N. O.*—Ranunculaceae.)

Sans.—Mishamitita. *Eng.*—The golden thread root *Bom.* & *Hind.*—Haladiya Bachnaga : Mahamirana.

Habitat.—Found in the Mishmi mountains east of Assam. Imported into Bengal in small rattan baskets each containing from one to two ounces of the rhizome.

Parts Used.—The dried root.

Constituents.—It contains neither tannic nor gallic acid but abounds in a compound of a yellow bitter principle *Berberine* soluble in water and in alcohol.

Action.—A pure bitter tonic resembling Calumba; febrifuge.

Preparations—Paste; Powder, dose:—10 to 15 grains; Tincture (1 in 8), dose:—½ to 2 drachms; Infusion (1 in 32), dose:—1 to 2 ounces.

Uses.—As a tonic it increases appetite, restores digestive powers and removes flatulence and visceral obstructions. It is said to be useful in jaundice as well as in debility, convalescence after fevers and other debilitating diseases, atonic dyspepsia and in mild forms of intermittent fevers. In catarrhal and rheumatic conjunctivitis, this root made into a paste with *Rasavanti* is used as a collyrium for the eyes.

Corallocarpus Epigoea.—See Bryonia Epigoea.

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218. CORCHORUS CAPSULARIS & C. Trilocularis.

(*N. O.*—TILIACEAE.)

Sans.—Nadika, Patta; Singgika. *Eng.*—Jute. *Fr.*—Corchore capsulaire. *Mah.*—Kurru Chantz. *Guz.*—Chunchdo; Moti-chunch. *Ben.*—Tita-Pat; Lalitapat; Koshta, *U. P. & Punj.*—Bawphal. *Hind.*—Singhin; Janascha. *Tam.*—Piratti-kirai. *Tel.*—Parinta. *Bom.*—Tankal; Chunch.

Habitat.—Indigenous to many parts of India; a low country weed in Ceylon. Extensively cultivated in Eastern Bengal.

Parts Used.—Leaves and seeds.

Constituents.—A glucoside as its active principle has been isolated.

Action.—The leaves are demulcent, bitter, tonic stomachic, laxative, carminative, refrigerant and diuretic. The seeds are bitter and purgative in effect.

Uses.--*Infusion* of the leaves is useful in atonic dyspepsia and liver disorders, and also as a fever-drink. It is used also in some cases of chronic cystitis, gonorrhoea and dysuria; also in worms of children, hepatic and intestinal colic and gastric catarrh. The *leaves* and *tender shoots* are eaten and in the dried state known as *Nalita*. The *cold infusion* of the dried leaves is used as a bitter tonic; it can be safely given to patients recovering from acute dysentery to restore the appetite and improve the strength. Six grains of the *powder* combined with an equal quantity of Curcuma longa has been used with success in acute dysentery. A *compound infusion* of the leaves with coriander and aniseed is a very good bitter stomachic and tonic. The seeds are bitter, and are given in 60 to 80 grain-doses in fevers and obstructions of the abdominal viscera.

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219. CORDIA MYXA or C. Domestica & C. Obliqua or C. Latifolia.

(*N. O.*—BORAGINEAE.)

Sans.—Bahuvara; Sleshmataka; Selu. *Arab.*—Dibaka; Mukhitaha. *Eng.*—Sebesten plum or fruit. *Guz.*—Gudan; Bargund. *Mah.*—Shelvan; Bhokur. *Hind.*—Lasora. *Bom. & Pers.*—Sapistan. *Ben.*—Bahubar; Bal-phal. *Tel.*--Botuku; Nakkaeru. *Tam.*--Naruvilli. *Can.*—Mannadike; Doduchallu. *Mal.*—Naruviri. *Kon.*--Sharpala.

There are two species.--Great and small; the adjective "great" or "small" is added to these names to distinguish the two species. In the greater species *i. e.* C. Obliqua the pulp is separable from the stone.

Habitat.—A small deciduous tree growing nearly all over India and cultivated in Bengal.

Parts Used.—The fruit, its mucilage, kernel and the bark.

Constituents.—The pulp of the fruit contains sugar, gum, extractive matter and ash; the bark contains a principle allied to "cathartin."

Action.—The fruit is demulcent; the bark is mild astringent and tonic.

Uses.—The *fruit* is very mucilaginous and the *mucilage* is highly esteemed in coughs, in diseases of the chest, the uterus, the urethra etc. In larger quantities it is given in bilious affections as a laxative. The *bark* is used in *infusion* as a gargle. The *kernels* are a good remedy for ringworm; they are powdered mixed with oil and applied. The *juice* obtained *from the bark* and administered in cocoanut milk is said to relieve severe colicky pains. The fruit is generally pickled in India. The ashes of burnt *Lasura* (Cordia Obliqua) are recommended in *Ilaj-ul-gurba* for dusting over in cases of prolapsus ani. The following compound syrups are recommended by Hakims in cases of bronchitis, pneumonia and phthisis.—

(1) Take of *Mulethi* (Liquorice), Aniseed, *Khutmi* (common mallow), *Hansraj* (Maiden hair ferns), each half a tola, *Zufa* (Hyssopus Officinale,) and *Methi* each quarter tola, *Lasora* (Cordia Myxa, bark and fruit) 7½ tolas, and *Post Khaskas* (poppy capsules with seeds) 11 pieces. Make a decoction and mix with sugar and reduce to the consistency of syrup 1 lb. Dose.—Two to four tolas thrice daily—(Ilaj-ul-Gurba).

(2) Take of *Zufa* 2 drs., Marsh mallow root 4 drs, Common mallow 4 drs., Liquorice 1½ drs., figs 5, poppy capsules 6 drs., Aniseed 6 drs., Sebesten fruits 40, Jujub berries 40. boiling water 4 pints. Macerate the whole for 12 hours; then boil down to half the quantity of water and strain. Add 2 lbs. of sugar and prepare a syrup. Dose.—½ to 1 ounce to be diluted with water.

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220. CORIANDRUM SATIVUM.

(*N. O.*—UMBELLIFERAE).

Sans.—Kustumbari ; Dhanyaka. *Gr.*—Koriyun. *Fr.*—Coriander cultive. *Ger.*—Gemeiner coriander. *Eng.*—Coriander. *Hind.*—Kottmir; Dhania. *Arab.*—Kusbara *Ben. Guz. & Mah*—Dhane. *Pers*-Kishniz. *Tel.*—Kotimiri. *Tam* Kottamalli. *Can & Kon.*—Kottumbari. *Mal.*—Kottampalari,

Habitat.—A herbaceous plant extensively cultivated in all parts of India for its seeds.

Parts Used.—The fruit (coriander fruit) and the leaves.

Constituents.—The fruits yield a volatile oil, 1 p. c. fixed oil 13 p. c. fatty matter 13 p. c. mucilage, tannin, malic acid and ash 5 p. c. Coriander oil contains Coriandrol (linalcol) an alcohol 2) d-pinene, l-pinene, geraniol and baborneol.

Action—The fruit is aromatic, stimulant, carminative, stomachic, antibilious, refrigerant, tonic, diuretic and aphrodisiac, The fresh leaves are pungent and aromatic.

Preparations—Infusion (cold) 1 in 40, dose.—1 to 2 ounces ; oil, dose 1 to 4 minims ; powder and com-

pound powder of the fried seeds containing black-pepper, cloves, and common salt; decoction of the fruit and poultice.

Uses.—The *fruit* is generally used by all classes as a condiment; and by some along with betel leaves; used to flavour purgatives and to prevent griping. It disguises the taste and smell of rhubarb and senna better than any other drugs. The oil is very useful in flatulent colic, rheumatism, neuralgia etc.; the dose is from 1 to 4 minims on sugar or in emulsion; the *dried fruit* has also similar effect; it is generally used in *infusion* or *decoction* in sorethroat, common catarrh and bilious complaints. An *eye-wash* is prepared by Mahommedans by decocting the fruits for preserving the sight in small-pox; it is also useful in chronic conjunctivitis. The *seeds* are generally chewed to correct foul breath; *roasted seeds* are useful in dyspepsia in doses of ½ to 1 drachm. They are made into a *paste* and applied to relieve pain in cephalalgia; as a *gargle* they are useful in thrush and as a *poultice* with barley meal added, applied to chronic ulcers and carbuncles. The *juice of the fresh plant* is an application to erythema. A strong *decoction in milk* (1 in 40) with sugar added to taste is given in cases of bleeding piles, as well as in dyspepsia, indigestion and flatulence; *cold infusion* of seeds or *powder* of fried seeds with a little sugar is very useful in colics of children; also relieves internal heat and thirst. Coriander is considered to lessen the intoxicating effects of spirituous liquors. In mixture, *coriander water* (*aqua coriandri*) is pleasant and grateful and is useful in indigestion and other bowel complaints. The *leaves* are used for prepa-

ring a sauce or *chutney*, like the leaves of spearmint, which is useful as carminative and antibilious.

The following are some very popular and useful prescriptions :—

(1) A preparation called *Dhana-ni-dala* or fried coriander is thus made :—The fruits are lightly pounded husks being removed; to this is added *jeera* (Cumin seeds), black pepper, cloves and common salt. The whole is stirred together, lime-juice being subsequently added and the mass dried in the sun. It is useful as digestive, carminative and stomachic.

(2) A compound powder composed of Coriander, cardamom and caraway seeds in equal parts parched and pulverised, and given after food in doses of 1 drachm, is a very useful digestive.

(3) A cooling drink is prepared from coriander seeds pounded with fennel fruit, poppy seeds, *Kanchanara* flowers (Bauhinia Variegata), rose-buds, cardamoms, cubebs, almonds and a little black pepper; it is sweetened with sugar.

(4) The following is recommended in "Zad Garib" as useful in diseases of the genito-urinary system, chordee, etc. :—Take of *Hijir-ul-Yahud* Coriander seeds, aniseed, *Kaknaj* (Physalis minima) each 16 grains and water 2 chataks or 1/8 seer; strain. To be taken at bed-time.

(5) Take of Coriander and chebulic myrobalan in equal parts. Roast on fire and make a decoc-

tion. To be taken for a week. Useful in vertigo.

(6) Take of *Khuskhus Safed* (Poppy seeds), Coriander, cotton seed, each 1 part in powder and sugar 2 parts. To be taken with rose water twice daily for vertigo.—(**Ilaj-ul-gurba**).

Coronelia Grandiflora—See Agati Grandiflora.

221. **Corydalis Govaniana** is a plant of the Genus Fumariaceae met with in Western Himalaya, and known in Vernacular as *Bhutakesi*. The yellow juice of this plant is employed in the treatment of eye-diseases like *Mamiran*. It is said to be also tonic and antiperiodic in action.

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222. CORYPHA UMBRACULIFERA.

(*N. O.*—PALMACEAE),

Sans.—Alpayushi. Katkali, Tali. *Eng.*—Tali-pot or Fan-Palm. *Hind.*—Bhajarbettu. *Ben.*—Talce. *Tel.*—Shreetalamu. *Tam.*—Shedalam. *Can.*—Shreetali, *Mal.*—Kutapana, Talipana, *Kon.*—Talat maddo.

Habitat.—South India.

Uses.—A kind of sago is obtained from the pith of this tree. People beat it in mortars to flour and bake cakes of it which taste much like white bread; it serves them instead of corn before their harvest is ripe; it is generally used by poor classes; it is also prepared in the form of *conjee* which is like that of sago, arrowroot, barley or oatmeal and almost equally nutritious.

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223. COSCINIUM FENESTRATIUM.

(*N. O.*—MENISPERMACEAE.)

Sans.—Daru-haridrakam. *Eng.*—Tree Turmeric. *Bom.* & *Hind.*—Jhar-i-huldi. *Mah.*—Jhade-halade. *Mal.* & *Tam.*—Mara-Manjel. *Tel.*—Manu-pasupu. *Can.*—Marada-arasina.

Habitat—In all parts of India.

Parts Used.—The stem.

Constituents.—The stem contains 'Berberine'.

Preparations.—Infusion (1 in 20) dose—4 to 12 drs. Tincture (1 in 10), dose—½ to 1 drachm. Decoction dose—½ to 1 ounce.

Action & Uses.—A bitter stomachic and tonic. As a very good substitute for Calumba it is found useful. A *paste* of it is applied to the head as a cooling application; and also to bruises, contusions etc. It is very useful in the form of *infusion* or *tincture* in continued and intermittent fevers, in general debility especially after fevers and in certain forms of dyspepsia.

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224. COSMOSTIGMA RACEMOSA.

(*N. O.*—ASCLEPIADEAE.)

Goa.—Gharphul. *Can.*—Gharahuvoo. *Mah.*—Shendvel; Shendori; Marvel. *Mal.*—Vettuvalli.

Habitat:—Sylhet, Chittagong and Western Ghats; from Konkan southwards to Ceylon.

Parts Used:—The root, root-bark, and leaves.

Constituents:—The root contains some crystalline fatty acids, a glucosidal acid-resin related to Jalapin, a gum, a sugar having the properties of dextrin, and a substance giving reaction of an alkaloid. The root is said to yield also an inorganic matter on incineration. The root is devoid of astringency. The powder of root

mixed with milk of lime is said to have given off ammonia.

Action & Uses:—This woody climber has a great medicinal reputation. Its *leaves* are used to cure ulcerous sores. The *root-bark* is given internally in 5 grain doses three times daily to act as an efficient cholagogue; in dyspepsia due to torpidity of the liver, and accompanied by febrile condition; it has no purgative effect, but restores the natural color of the stools; it is said to be even better than euonymin, podophyllin etc. The *flowers* are sweet and eaten by poor people.

225. COSTUS SPECIOSUS.

(*N. O.*—ZINGIBERACEAE.)

Sans:—Pushkara; Kashmeera; Kemuka. *Mah*:—Penva. *Hind*:—Keua; Kust. *Ben*:—Keu; Kura. *Tel*:—Kashmeeramu. *Tam*:—Koeshtam. *Can*:—Pushkaramoola. *Mal*:—Channakkoova; Narunchana. Fr.—Costus elegant. *Ger*:—Practige Kostwur. *Gr*:—Kostus.

Habitat:—An elegant climbing plant found plentifully in Bengal and Cashmere.

Parts Used:—The root and tuber.

Action:—The root is bitter astringent, stimulant and digestive, anthelmintic, depurative and aphrodisiac.

Uses:—The *root* is useful in catarrhal fevers, coughs, dyspepsia, worms and skin diseases; the *tuber* is cooked and made into a syrup or preserve which is considered to be very wholesome.

Cotyledon Lanciniata.—See Kalanchoe Lanciniata.

Cotyledon Rhizaphylla—See Bryophyllum Calycacinum.

Crataeva Marmelos—See Aegle Marmelos.

226. CRATAEVA NURVALA or C. Religiosa

(*N.O.*—CAPPARIDACEAE)

Sans.—Pashuganda; Ajapa Varuna: Asmarighna. (*asmari* means gravel or stone). *Eng.*—Three leaved caper. *Hind.*—Tapia; Bilasi; Barun, *Ben.*—Tikoshak. *Mah & Guz.*—Vayavarna. *Tam.*—Marilinga. *Can.*—Narumbele. *Kon.*—Narvala *Mal.*—Nirvala. *Mah.*—Ramala; Karuan: Haravarana. *Tel.*—Uskia; Urumatti,

Habitat.—Usually cultivated in the vicinity of temples in Central India, Bengal and Assam, found near streams in Malabar and Kanara.

Parts Used.—The bark, leaves and root-bark.

Constituents.—The bark, contains a principle similar to Saponin.

Action.—The leaves are stomachic, tonic, the root and the bark are laxative and lithontriptic; the root is also alterative. The root and the bark promote appetite, increase biliary secretion; the fresh leaves are externally rubefacient and internally febrifuge and tonic.

Uses.—The *leaf-juice* in doses of ½ to 3 tolas is given in rheumatism mixed with cocoanut milk and ghee; and *externally* the *bark* and *leaves* pounded and tied in a cloth are supplied as a fomentation; the *root* and the *bark* are also used in the form of embrocation which is prepared by boiling them in oil. They form the principal medicine for calculus affections. The *bark* is specially useful in urinary complaints and fevers and to relieve vomiting and symtoms of gastric irritation; it is generally administered in the form of *decoction* with the addition of treacle; the decoction is prepared by bruising and boiling 4 ounces of

the bark in 1½ pints of water till reduced to 1 pint and then strained and cooled; the dose is from 2 to 4 ounces. The *infusion of leaves* (1 in 10) is described as a bitter and aromatic tonic and given in doses of 2 to 4 ounces thrice daily. The *compound* decoction containing its root-bark and leaves, and small caltrops (*gokhru*), ginger, carbonate of potash, honey and water is very useful in ascites, urinary disorders and in calculous affection. A confection called *Varunadya guda* is prepared by adding to the fluid extract of the bark, treacle and a number of diuretic and aromatic substances. The *fresh leaves* bruised well with a little vinegar, lime-juice or hot water, and applied to the skin as poultice or paste act as rubefacient and vesicant as efficiently as mustard flour; it takes 5 to 15 minutes, to obtain rubefacient effect; if kept longer it acts as vesicant. The *fresh leaves and roots* mixed with cocoanut juice and ghee are used as food to reduce corpulence. The *leaf is smoked* in caries of the bones of the nose, and the smoke is exhaled through the nose. A *paste* of the leaves applied to soles of the feet to relieve swelling and burning sensation. SARANGDHARA says that in scrofulous enlargements of the glands under the lower jaw, a *decoction of the bark* of this tree is prescribed by several writers. It is said to cure even old standing cases. In internal or deep-seated suppurative inflammation decoction of this bark and also of Boerhavia diffusa (*Punarnava*) in the proportion of 5 to 2 parts respectively, is given internally, in doses of half to one ounce; it also relieves swollen testicles. Other useful preparations of the bark are a compound *Ghrita* and Oil., known as *Varunadya ghrita* and *Varunadya taila*, which

are prepared with the addition of several tonic, alterative, aphrodisiac and demulcent drugs.

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227. CRINUM DEFLEXUM or C. Asiaticum ; C. Bracteatum ; C. Toxicarium; or Amaryllis Zeylanicum

(*N. O.*—AMARYLLIDEAE.)

Sans.—Sudarshan ; Vishamandala. *Eng*—Poison bulb *Hind.*—Chindar ; Badakanvar. *Ben.* & *Urdu.*—Sookhdursun *Duk*—Naginka-patta. *Guz.* & *Bom.*—Nagdowna. *Ben.*—Gaerahonara-patta. *Tel.*—Kesarichettu. *Tam.*—Tudaivachi ; Vishamoongil. *Can.*—Vishamoonguli. *Mal.*—Vishamula; Valutta polatali. *Kon.*—Kirtmari. *Mah.*—Gadanikanda or Gadambhikanda.

Habitat.— Much cultivated in Indian gardens.

Parts Used.--The leaves, and root (fresh bulb).

Action.—The leaves and root are emetic and diaphoretic.

Preparations.—Succus (juice of the fresh bulb), dose—2 to 4 drachms ; Syrup (1 in 3), dose—2 drachms, as an emetic for children. The dried roots require double the dose. Poultice of leaves and powder of root.

Uses.—The *leaves* and *root* are a good substitute for ipecacuanha. They act without griping, purging or any other distressing symptoms. The succulent *leaves* besmeared with castor oil and warmed or the *bruised leaves* mixed with the oil form a useful application for repelling whitlows and other inflammations at the end of toes and fingers ; also as fomentations to inflammed

joints and sprains. The *juice* of the leaves with a little salt is used for earache and other ear complaints after being slightly heated; an *oil* is also prepared from the fresh juice and used for the same purposes. The *roasted bulb* is used as rubefacient in rheumatism. The *bruised leaves* are generally kept in cattle sheds as they are supposed to have the property of driving away noxious insects and parasites; the smoke of the burnt leaves is regarded as poisonous to mosquitoes.

Crocus Indicus.—See Carthamus Tinctorius.

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228 CROCUS SATIVUS or C Saffron.

(*N.O.*—IRIDEAE.)

Sans.—Bhavarakta; Saurabha; Mangalya; Agnishikha; Kumkuma. *Eng.*—Saffron. *Arab. and Pers.*—Zipharana. *Hind. and Ben.*—Jafran. *Mah. and Guz.*—Keshar. *Tel.*—Kunkuma-puvva. *Tam. and Mal.*—Kunkum-pu. *Can. and Kon.*—Kunkuma-kesara. *Fr. and Ger.*—Safran.

Habitat.—An autumnal dwarf herb, a native of Levant in Asia Minor, now cultivated on a small scale in Kashmir.

Parts Used.—The dried stigmas and tops of the styles of Crocus Sativus. The dried stigmata of the well-known flowers constitute the saffron of commerce compressed into cakes and called "cake saffron," the ordinary saffron being called "Hay saffron."

Constituents.—A volatile oil, Crocin—a glucoside soluble slightly in water, freely in alkaline solution and alcohol; and forming 65 p. c. of polychroit (many colors) which is the coloring matter, picrocrocin (bitter princi-

ple), wax, proteids, fixed oil, mucilage, sugar (glucose ?) ash 5 p. c., and moisture 12 p. c.

Action.--It has a peculiar aromatic odour and a bitter, pungent taste. In action it is stimulant and stomachic; slightly anodyne and antispasmodic; it has also emmenagogue virtues; in over-doses it is narcotic poison. It is used in small doses ¼ to ½ grain. Ordinary dose is 1 to 3 grains.

Preparations.—Tincture, dose.—5 to 20 minims; Infusion (Saffron tea—1 in 80) dose—1 to 4 ounces.

Uses.—It is used generally as a condiment for its aromatic odor and beautiful colouring matter. Medicinally it is used in small doses, in fevers, melancholia, enlargement of the liver and in spasmodic cough and asthma; and in catarrhal affections of children. It is given in anaemia, chlorosis and seminal debility. It gives the urine a yellow color. It is given in rheumatism and neuralgia; and to children with ghee in looseness of the bowels. It is given also to relieve flatulent colic. It is given in amenorrhoea, dysmenorrhoea, leucorrhoea, etc. *Pessaries of saffron* are used in painful affections of the uterus. *Externally* saffron is used in headache in the form of *paste*, also applied to bruises and superficial sores. It is an excellent palliative for haemorrhoids. To cage-birds when they are moulting or otherwise sickly, it is given, a few threads being infused in the water which they drink. The following preparation is very useful in chronic diarrhoea, chronic discharges and seminal weakness:—Take of Saffron 2, Opium 2, Cloves 4, *Safed Miri* (dry white fruits of Piper Nigrum, deprived of their pericarps) 10, *Khora.*

sani ajavan (Henbane seeds) 10, Pellitory root 10, *Hab-ul-balsana* (balsam of Balsamodendron Opobalsamum) 1, *Tukhm-i-Karaphsa* (Wild celery—Apium Graveolens) 1, Dried ginger 2, *Kuchla* (Nux-vomica seeds) 10 *Pharaphiyum* (Gum-resin of Euphorbia Resinifera) 12, *Badam-na-tel* (Almond oil) 20 and Honey 20 parts. Make a confection. Dose :—grains 20.

229. **Crotalaria Albida or C. Montana,** of the Leguminous genus known as *Banmethi* in Hindi, is met with in tropical regions in India, Ceylon, Burma, etc. Its roots are used as a purgative.

230. **Crotalaria Angulosa or C. Verrucosa.**—(*Sans.*—Sonapushpi ; Dhavani ; Vrihatpushpi) is another member of the same family found in the tropical regions of the Himalayas and Ceylon, is known as *Bansen* in Bengali & Hindi ; *Vuttei-khilloo-killupai* in Tamil ; *Ghelagherinta* in Telugu ; *Ghagri* or *Khilkhil Dingala* in Mahrati, and *Tirat* in Bombay. Its leaves are supposed to diminish salivation, for which their juice is used. It is also prescribed both internally and externally in cases of scabies and impetigo.

231. **Crotalaria Buriah of the same Genus.**—(*Punj.*—Sis ; Sassi ; Khippi ; Kharasan. *Sind.*—Drunco : *Guz.*—Ghangaro ; *Mah.*—Ghagti ; *Kon.*—Ghagri) growing in sandy plains of Sindh and the Punjab, Western Rajputana and Gujrat, has its branches and leaves used as a cooling medicine.

232. COTALARIA JUNCEA or C. Bengalensis or C. Fenestrata or C Fenninfollia.

(*N. O.*—LEGUMINOSAE)

Sans.—Jenapavera; pulivanji. *Eng.*— Sun or Bengal hemp *Fr.*—Crotalaire jonciforme. *Ben.*—Sonpat: Ghore-sun. *Hind.*—Masina: Mustanpat. *Bom.*—Macsapat; Taag-ambharee *Duk.*—Janab *Guz.*—Sun. *Mah.*—Taga; Son-abu. *Tam.*—Wakkwooganapan; Shanabo; Janappanar. *Mal.*—Janapa; Pulivanji *Can.*—Sanabu; Sanabina-pundi.

Habitat.—Throughout the plains of India, especially Mysore and Deccan.

Parts Used.—Leaves roots and seeds.

Constituents.—The leaves contain an abundance of mucilage, a little solid fat, and a resin soluble in ether.

Action—The leaves are refrigerant, demulcent, emetic and purgative, emmenagogue and abortive. The root is astringent. The seeds are corrective of blood.

Preparations.—Infusion (1 in 10), dose—1 to 2 ounces. Powder of seeds, dose—10 to 30 grains.

Uses.—The bitter *leaves* are used externally and internally in the form of infusion in gastric and bilious fevers accompanied by skin diseases such as impetigo and psoriasis. They are also given to increase the flow of menses as emmenagogue. The seeds are said to purify the blood. The *seeds* in powder mixed with oil are used to make the hair grow. The *root* is useful in colic and as astringent in epistaxis also. This plant furnishes a coarse fibre called *Sana, Taga* or Bengal hemp used for making ookum and surgical tow.

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233. CROTON OBLONGIFOLIUM.

(*N.O.*—EUPHORBEACEAE.)

Sans,—Bhutamkusam; Bhuthala Bhairi. *Ben.*—Baragachi Chucka. *Goa.*—Gonsurang. *Hind.*—Arjuna, *Mal*,—Kote Putol, *Mah.*—Ganasura. *Kon.*—Ghansurang. *Santal.*—Gote.

Habitat.—Bengal, Behar, S. India, Deccan, Burma and Ceylon.

Parts Used.—The root, bark, leaves and fruit.

Constituents—An alkaloid and various acid principles.

Action.—The bark and root are alterative and cholagogue. The seeds are purgative.

Preparations—Infusion of the bark (1 in 20), and decoction of the leaves (1 in 20.) dose:—½ to 1 fluid ounce.

Uses:—The *bark* is used in reducing chronic enlargement of the liver and in remittent fever. It is applied externally to the hepatic region and in chronic hepatitis and also to sprains, bruises and rheumatic swellings. It has also a reputation as a remedy in snake-bites.

Croton Polyandrum.—See Jatropha Montana.

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234. CROTON TIGLIUM.

(*N. O.*—EUPHORBIACEAE.)

Sans,—Naepâla; Jayapâla; Kanakphala; Titteriphala *Eng.*—Purgative croton; Croton-oil seed., *Hind*, *Guz.*, & *Duk.*—Jamâlgoet. *Ben.*, & *Punj.*—Jaipàl. *Mah.*—Jeyapàl. *Tel.*—Naepàlvaema. *Tam.* & *Mal.*—Naervâlam; Chiduram *Can.*—Jàpāla beeja. *Kon.*—Jàpal. *Arab.*—Hab-ul-salatina *Pers.*—Bed-anjir-e-khatai. (OIL).—*Eng.*—Croton oil. *Fr.*—Huile-dectiglium. *Ger.*—Krotonol.

Habitat.—Found wild and widely distributed throughout India and plentiful in Eastern Bengal extending to Assam and Burma.

Parts Used.—The seed and fixed oil from the seed

Constituents.—The seed contains a fatty fixed oil tiglinic acid, crotonic or quartenylic acid and croton oil. The fats present in croton oil are glycerides of stearic palmitic, myristic and lauric acids and of several volatile acids of the same series like acetic, butyric, valerianic and tiglic acids. Croton oil is composed of:—(1) Crotonoleic acid, which appears to be the active principle; (2) Tiglic acid or Methyl crotonic acid; (3) Crotonol, which is non-purgative, but an irritant to the skin (4) several volatile acids to which the odour is due and (5) several fatty acids. The crotonoleic acid is a mixture of croton resin with inactive fatty acids.

Action.—The seed, leaves, bark and the root, all possess drastic purgative properties. The seed is a powerful drastic purgative and vermifuge; in over-doses it is an acro-narcotic poison. The oil is a powerful hydrogogue cathartic and externally a vesicant producing irritation, inflammation, papular and pustular eruption. The activity of croton oil is a vesicant externally and as a purgative internally is attributed to the presence of crotonoleic acid which is said to occur in the free state in which it is freely soluble in alcohol, and in combination as a glyceride. The glyceride does not possess poisonous properties, but the free acid acts as a powerful irritant to the skin and as a purgative in the intestines. The crotonal glyceride is attacked and split up like other glycerides by the ferments of the juices of the stomach

and the crotonoleic acid is set free, which then exercises its purgative influence. A similar result may be obtained by administering crotonoleic acid as a pill enclosed in keratin.

Preparations.—Oil, dose,—$\frac{1}{4}$ to 1 minim; Liniment; and Powder of the seeds; dose,—2 to 5 grains.

Uses.—It is given only when a strong purgative is required, as in dropsy and cerebral affections like apoplexy, convulsions, insanity, and ardent fevers etc., where complete evacuation of the bowels is desired. The *seeds*, before they are used, are boiled in cow-dung and water, and after drying and their outer skin and embryo (the little leaf-like body found between the two halves of the kernel) are removed, they are boiled two or three times in milk and then enclosed in a raisin for administration. The *seeds* are employed in very minute doses in the form of *pills*, prepared with great care; the dose being $\frac{1}{4}$ to $\frac{1}{2}$ grain, mixed with extract catechu and honey and gum acacia. Or, the seeds after being broiled and deprived of oily matter, are powdered and given mixed with equal part of powdered cumin seeds, in doses of 5 to 10 grains. The seeds half-roasted over a lamp or candle-flame and the smoke inhaled through the nostrils relieves a fit of asthma. The *oil* is useful in dropsy, obstinate constipation, intestinal obstructions, lead poisoning, and as a preliminary laxative in leprosy and as a revulsive in apoplexy, the dose being *1* drop on sugar or in emulsion with sweet oil or butter or made into a pill with bread crumb. As a *blister* it is applied to the scalp in acute cerebral diseases, to the cord in spinal meningitis, to the chest in chronic bron-

chitis, and to the throat in laryngitis. In lock-jaw and mania it is of great advantage; a few drops placed at the base of the tongue will produce catharsis. It is particularly valuable in cases where a minute and effectual dose is required; but it must not be resorted to except in cases where it is desirable that a speedy irritant action on the intestines should be produced, and in cases where the condition of the patient prevents him from swallowing. In minute doses it is given with fresh ginger tea to children in whooping cough. Should it cause griping, vomiting or too violent purging a good large draught of lime-juice is the best antidote, and it may be safely repeated in half an hour if the vomiting etc, continue. *Externally* it is of great value in the form of liniment. A useful liniment is made by mixing half an ounce of croton oil with 3 to 4 ounces of sesamum, cocoanut or other bland oil. For bronchitis and rheumatism a drachm of croton oil mixed with 12 drachms of mustard oil will from a good liniment; and for chronic rheumatism a mixture consisting of 1 part of the croton oil to 8 parts of cocoanut oil will from a suitable liniment. It will form a useful application also in asthma, gout, paralysis, neuralgia and acute laryngeal affections and arthritis.

The following Ayurvedic prescriptions are useful in the various diseases in which they are employed:—

(1) *Ichhavedivatica.*—Take of mercury, sulphur, borax and black pepper, one part each, ginger three parts, croton seeds nine parts; rub them together with water and make into two-grain pills. These are given in fever with constipation as also in ascites and anasarca. (Rasendrasarasangrah).

(2) *Rukkeshee Rasa* :—Take of chebulic myrobalan five parts, croton seeds one part, soak them in the milky juice of Euphorbia nerifolia (*snuhi*) and make into four-grain pills. These are given with a decoction of the root of Ipomœa Turpethum (*trivrit*) or Baliospermum Montanum (*danti*) as a drastic purgative in obstinate constipation—(Rasendrasarasangraha).

(3) *Mahanaracha Rasa*:—Take chebulic myrobalan, pulp of Cassia Fistula, emblic myrobalan, root of Baliospermum montanum (*danti*), Picrorrhiza Kurroa (*tikta*), milky juice of Euphorbia nerifolia (*snuhi*), root of Ipomœa Turpethum (*trivrit*), and the tubers of Cyperus rotundus (*mustaka*) each one tola; pound them to a coarse powder and boil in 4 seers of water till the latter is reduced to one-eighth. Then take a tola of husked croton seeds, tie them in a piece of thin cloth and boil them in the above-mentioned decoction till the latter is reduced to the consistence of a fluid extract. To this extract add a powder composed of 8 parts of purified croton seeds, three parts of ginger and two of black pepper, mercury and sulphur, in quantity sufficient to make a pill-mass; rub them together for twelve hours and make into two-grain pills. These are given with cold water in tympanitis, colic, ascites &c., as a drastic purgative. After the operation of this medicine rice should be given with curdled milk and sugar (Bhavaprakash.)

Toxicology :—"The seeds are said to be used in Java for killing fish, and the oil has been shown to have same effect upon the carnivora as upon man. When eaten, the seeds cause nausea and eructation, followed by flatulent distension of the abdomen, colic and diarrhœa,

A single seed is reported to have proved fatal. The oil, in the dose of 1 drop, occasions more or less an acrid and burning sensation in the fauces and oesophagus, a sense of warmth in the stomach, nausea and sometimes vomiting. In an hour or two, some gurgling or slight colic is perceived in the bowels, followed somewhat suddenly by a watery stool with tenesmus, and heat about the anus. Within 24 hours eight or ten more stools follow, and there is but little general disturbance of the economy, except considerable weakness. Sometimes, instead of producing evacuations, the oil causes epigastric uneasiness and oppression, palpitation of the heart, headache, feverishness, perspiration and sleep. It would appear that the acrid principle of the oil is not the sole cause of its cathartic operation, for even after being thoroughly washed with alcohol and rendered mild to the taste, as well as incapable of pustulating the skin, it is still strongly purgative. No cases of poisoning by croton seeds or oil in India appear to have been recorded"—(Dymock).

235. **Cryptocoryne Spiralis** or Ambrosinia Spiralis is a species of the Genus Aroideae, (*Tam*:—Nattu-ati-vudayam. *Tel*:—Natti-ati-vasa.) found in Bengal and Deccan. Its root is used as a tonic and antiperiodic like the tuber of Aconitum Heterophyllum. It is employed in decoction. In combination with other drugs it is a remedy for infantile vomiting and cough, and in the case of adults for abdominal complaints and fever.

236. CUBEBA OFFICINALIS.

(*N. O.*—PIPERACEAE.)

Sans:—Suganda-muricha. *Eng*.—Tailpepper; ; Cubebs. *Hind.* & *Ben*.—Sitalachini; Kabab-chini. *Guz*:—Tadamiri

Mah. & *Kon.*—Kankola; Himsimiri. *Arab.*—Kababah. *Tel*—Toka-mirayalu : Chalava-miriyalu. *Tam.* & *Mal*—Val-milaku. *Can.*—Gandha-menasu; Balmenasu. *Pers.*—Kibabeh ; Hab-el-arus (bridegroom's berry) . *Gr.*—Mahilyun; Karifiyun.

Habitat:—This climbing woody bush is indigenous to Java and Sumatra; but the cubebs, the dried unripe full-grown fruits of the shrub, are obtainable in the Indian bazaars, being imported from Singapore.

Parts Used:—The dried immature full-grown fruits called the cubebs.

Constituents:—An active principle 3 p. c., a volatile oil 5 to 15 p. c., oleo-resin 3 p. c. containing cubebin 2 p. c. and cubebic acid 1 p. c.; fatty matter, wax, starch, oil, gum 8 p. c., and ash 5 p. c., (malates of magnesium and calcium.)

Action:—Stimulant, carminative, diuretic and expectorant.

Preparations:—Powder, dose:—grs., 10 to 20; Paste; Infusion, dose:—1 to 2 oz; and oil, dose:—5 to 10 drops, given with mucilage or syrup in water.

Uses:—It is used as a carminative spice, as stimulant to the mucous membrane in diseases of the genito-urinary organs such as gonorrhoea, gleet, leucorrhoea and other vaginal discharges of women; as expectorant in the coughs of old age. A *mixture* of potassium nitrate and cubebs in *powder*, 10 grains each is a good remedy for gonorrhoea. For gleet and chronic gonorrhoea 30 grains of powdered cubebs mixed with 5 grains of alum given thrice daily. As expectorant, 10 grains of cubeb-powder in 30 drops of mucilage in an ounce of cinnamon water, given thrice a day is beneficial in bronchitis and laryngitis.

Cubeb produces tension of the vocal cords and clears the throat of the tenacious mucous and, therefore, it is much used by singers. *Cubeb-powder* is best taken in milk and the *oil* in mucilage. Cubeb is regarded by Hakims as an expellant of gravel and stone from the kidneys and bladder. *Externally* a *paste* made from it in rose water is applied to the head in headache. The following are some useful remedies containing cubebs in their composition:—

(1) Take of Cubebs, liquorice, long pepper, Chebulic myrobalans, and *Chitharathai* (Alpina Chinonsis) equal parts by weight and powder them and mix them together. Place the mixture in 15 times its weight of water and prepare a compound decoction by boiling till the whole is reduced to quarter its volume. Dose of this compound decoction is one ounce three or four times a day. It may be converted into an electuary with honey. This is useful in acute and chronic bronchitis.

(2) Take of cubebs, *deodar* (Cedrus deodar), and *Kist* (fruit of Helicteres Isora) 160 grains each, *Bhungara siah* (Eclipta of the black variety), Black pepper, Pellitory root, *Gujbil*, Sun seeds, Sun hemp seeds (Crotalaria Juncea), each 7 drachms, and *gugul* 12 tolas and honey sufficient quantity to make a pill mass. Make into pills weighing half tola each. Dose :--One pill twice a day in epilepsy.—(Ilaj-ul-Gurba.)

(3) Take of Cubebs 5, Mastich gum 4, silicate of lime 3, Dryobalanops camphora (Chinese camphor) 3, cardamoms 4, *sonamukhi dagadi* (Cassia Lanceolata) ½, Round zedoary (Curcuma aromatica) 4, Iris pseudocorus rhizome 3, and nitrate

of potash 4 parts. Reduce the whole to a fine powder. Dose:—drs. 1 to 2. Used in gonorrhoea, gleet, leucorrhoea and chronic diseases of the genito-urinary organs.

Cucumis Acutangulus—See Luffa Acutangula.

237. **Cucumis Anguinus** (*Sans.*—Chirvite. *Ben.*—Kakura. *Fr.*—Concombre serpent) is a species belonging to the genus of Cucurbitaceæ found in Eastern Bengal and remarkable for the long and serpentine form of its edible vegetable fruit. It is regarded as diuretic and aperient in action.

238. **Cucumis Melo** is another species of the Cucurbitaceæ family (*Sans*—Kalinga. *Eng.*—Sweet or Musk-melon. *Hind. and Mah.*—Khurbuj; Sakkar Teti. *Ben.*—Khermuj. *Guz.*—Turbuch. *Tel.*—Velapandu. *Tam.*—Velapalam. *Can.*—Kalingada. *Kon.*—Bachang. *Fr.*—Cataloup. *Ger.*—Melonegurke.) extensively cultivated in gardens as well as in the sandy basins of rivers and found particularly in the North West and in Northern Bengal. The fruit especially the pulp or the *juice* forms a nutritive, demulcent, diuretic and cooling drink. It is beneficial as a *lotion* in chronic and acute eczema as well as tan and freckles and internally in cases of dyspepsia. The *pulp* mixed with cumin seeds (*jeera*) and sugar candy is a cooling diet in hot season. The *seeds* yield a sweet edible *oil* which is nutritive and diuretic useful in painful discharge and suppression of urine. The same benefit is attributed to the seeds of all the species of Cucumis family. Pounded seeds and sugar candy half a tola each, forms a nutritive diet. The *root* of this plant is found to contain emetic principle; therefore it has emetic and

purgative properties The composition of the seeds and other parts of the plant is similar to those of water-melon. Hypoxanthine (Sarcine) is found to exist in this plant. For further particulars see Citrullus Vulgaris.

239. **Cucumis Momordica** is again another species of the same Genus (*Sans.*—Ervaru; Karhati. *Ben.*—Phute (ripe); Karchra (unripe) *Hind.*—Tuti. *Tel.*—Pedda dosrai; Pedda-kai. *Tam.*—Kakrikai.) The seeds of this plant are used as a cooling medicine.

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240. CUCUMIS SATIVUS.

(*N.O.*—CUCURBITACEÆ.)

Sans.—Sakusa; Trapusha. *Eng.*—Common cucumber. *Hind and Duk.*—Kánkri. *Ben.*—Khira; Sásá. *Guz.*—Kâkri. *Mah.*—Kàkdi. *Tel.*—Dosekàya. *Tam.*—Mulluvellari. *Can.*—Mullusavte; Sautekàyi. *Mal.*—Mullanvellari; Kakkari. *Kon.*—Towshe. *Arab.*—Bazarula.

Habitat—Found wild in the Himalayas from Kumaoun to Sikkim; but it is cultivated throughout India.

Parts Used.—The seeds and leaves.

Constituents.—Fixed oil, starch, resin and sugar.

Preparations—Cold infusion (1 in 10), dose :—2 to 4 drs.; Powder; Paste, and Confection.

Action—Nutrient and demulcent.

Uses—The *seeds* yield an *oil* like that of the seeds of other species of cucumis. The five species belonging to this genus which are akin to one another in action are Citrullus Vulgaris, Cucumis Melo, C. Sativus, C. Utilissimus and Beninkasa Cerifera. Their seeds are always used together and considered cooling, diuretic and strengthening. The *leaves*, boiled and mixed with cumin seeds,

roasted and powdered, are administered in throat affections in doses of 30 grains or more. Powdered and mixed with sugar they are powerfully diuretic. In sunstroke pieces of cucumber are placed on the head so that the patient may breathe moistened air, in order to neutralise the heat of his body. The following preparations are very popular among Hakims :—

Confections:—(1) Take of seeds of Cucumis Sativus, C. Melo, and Citrullus vulgaris and Raisins, each one ounce; chicory 2 ounces, sugar 10 ounces and water 1 lb. Boil the four kinds of seeds in water and strain; then add sugar and vinegar and prepare a syrup in the usual way. Dose:—half to one ounce mixed with water, three or four times a day. Useful as a valuable diuretic in strangury and as a refrigerant in remittent and inflammatory fevers. (2) Take of seeds of C. Sativus, C. Melo, Citrullus vulgaris- Daucus Carota (carrots) and Lagenaria vulgaris (*Dudiya bija*) each 10 parts; kernel of sweet almonds 10, Pistacia Lentiscus (mastich galls) 6, Buchanania Latifolia (*Charoli*) 6, Poppy seeds 5, Seeds of Pinus gerardiana 4, Cardamoms 5, Tribulus terrestris (*Gokshura*) 6, root and seeds of Piper longum each 5 parts, Eulophia campestris (*Salamisri* Punjabi) 5, dry ginger 5, Asparagus adscendens (*Safed-musli*,) *Sataver* 5, *Kamarkas* (Buteagum) *Bijaband* (Rumex Maritimus) 5, and sugar 20 parts. Mix and make a confection. Used in seminal weakness and urinary disorders.

Powder:—Take of seeds of C. Sativus, Lattuce seeds (Lactuca sativa) and seeds of Portulaca Oleracea each 9 parts, Opium 1, and Henbane seeds 5 parts. Reduce these to a powder. Dose:—1 to 3 drachms. Use-

ful in painful diseases of the bladder and of the urethra.

Paste:—Take of seeds of C. Sativus, Chicory, Portulaca oleracea. Lettuce seeds and black Hellebore, equal parts. Mix and make a paste. Dose:—grains 10 to 15. Used in fevers by Unani Hakims.

241. Cucumis Trigonus and C. Pseudo-colocynthis; *Var.*, Pubescens are species of the same Genus found, the former in the upper Gangetic plain, and the latter on the lower range of the western Himalaya. These plants (*Eng.*—Bitter gourd. *Sans.*—Vishala. *Hind.*—Bislambi Jangli-Indrayan. *Mah.*—Takmaki; Karit; Katvel. *Tam.*—Kattu-tumatti. *Tel.*—Adavi-puchcha; Kodinella. *Can.*—Hal mekki. *Kon.*—Karanti.) occur in two distinct varieties: the wild bitter form (*Pahadi Indrayan* or hill colocynth) having smooth fruits with green and yellow streaks like colocynth, and the pubescent or semi-cultivated form with velvetty fruits which are sweet when ripe and are eaten as a vegetable when green. The *fruit* is appetiser and is useful in bilious disorder. The wild bitter fruits are never eaten, but are used sometimes medicinally in the same way as Citrullus vulgaris. The seeds are considered cooling and are beaten into a paste with the juice of Cynodon Dactylon (*doorva*) and applied to herpatic eruptions. The bitter gourd is generally used at the feast of the Divali when it is crushed and applied to the tongue and forehead under the faith and belief that it averts disease during the following new year. In Malabar the plant is supposed to be alexipharmic and to have the power of removing pains and aches. The fruit pounded and boiled with cow's milk and applied to the head is supposed to prevent insanity, strengthen

the memory and remove vertigo. Modern investigation has shown that the medicinal properties of this gourd do not differ from those of Colocynth. A decoction of the root (1 in 10) is useful as a purgative. It is stated to be milder in effect than the pulp of the fruit and causes less irritation.

242. **Cucumis Utilissimus** is a variety of the species of C. Melo (*Sans.*—Karkati. *Ben.*—Kakura) cultivated in gardens in Bengal, U. P., and the Punjab and is regarded as diuretic and useful in promoting the passage of sand or gravel. Two drachms of the seeds rubbed into a pulp with water and milk are given; and the powder of seeds 2 drachms combined with twenty grains of rock-salt is given, with much benefit in painful micturition and suppression of urine. The fruit is sweet, refrigerant and beneficial in strangury and hematemesis.

Cucurbita Cerefera & C. Pepo.—See Beninkasa Cerefera.

Cucurbita Citrullus.—See Citrullus Vulgaris.

Cucurbita Lagenaria.—See Lagenaria Vulgaris.

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243. CUCURBITA MAXIMA.

(*N. O.*—CUCURBITACEAE).

Sans.—Punyalatha ; Dadhiphala. *Eng.*—Red gourd. *Ben.*—Saphurii: Kumra. *Hind.*—Pila kohola ; Kasiphala ; Mithakaddu. *Guz.*—Piluñ-kohalun. *Mah.*—Lâl Bhopla. *Sind.*—Pralakalu. *Tel.*—Gummadi Kâyi. *Tam.*—Pooshani. *Mal.*—Chakkerakumpalan. *Can.*—Gumbalo ; Chinikâyi. *Kon.*—Duddini. *Fr.*—Gourge. *Ger.*—Riesenkurbis.

Habitat.—This creeper is extensively found very frequently on the roofs of houses all over India.

Parts Used.—The seeds, pulp and fruit-stalk.

Constituents.—Similar to those of other Cucurbitaceous plants.—fixed oil, resin, proteins, sugar and starch.

Action.—The seeds are taenacide and diuretic. The oil from the seeds is a nervine tonic.

Preparations.—Paste of the seeds freed from husks.

Uses.—The *fruit* is largely used by Indians in their curries. The seeds are given with sugar in tapeworm. They are given at bed time, followed next morning with a dose of castor oil. As a diuretic they are given in gonorrhoea and urinary diseases. Dose.—4 to 8 drachms with sugar or honey. The *pulp* of the fruit is often used as a poultice to boils, carbuncles, unhealthy ulcers, etc. The *dried pulp* is a remedy in haemoptysis and haemorrhages from the pulmonary organs, it is given in the form of a *confection*. The part of the *fruit-stalk* which is in immediate contact with the ripe gourd is removed and dried, and made into a *paste* by rubbing with water and given as a specific for bites of venomous insects of all kinds, chiefly for that of the centipede. Other uses are like those of the five chief Cucurbitaceous plants *viz.*, C. Cerefera, C. Citrullus, Cucumis Mello, C. Sativus, and C. Utilissimus.

244. CUMINUM CYMINUM.

(*N. O.*—UMBELLIFERAE.)

Sans.—Jeeraka, Hrasvanga, Kunchika, Ajmoda, Jira. *Eng.*—Cumin seed, *Hind and Ben.*—Safed Jeera. *Pers.*—Zira. *Guz.*—Safed Jiraun, *Tel.*—Jeelakara; Jirana. *Tam. and Mal.*—Cheerakam, *Can.*—Jeerige. *Kon.* and *Mah.*—Jeera. *Arab.*—Kamun. *Fr.*—Anisacre; Cumin officinal. *Ger.*—Venedischer Kummel.

Habitat—This is extensively cultivated in Northern India and the Punjab; also imported from Persia and Asia Minor.

Parts Used.—The fruit or seed, and the essential oil.

Constituents.—Fatty oil, resin, mucilage, gum; protein compounds, malates and an essential oil to which the aromatic odor and taste is due. The essential oil contains cuminol or cumin aldehyde 56 p. c., a mixture of hydrocarbons, cymene or cymol, terpene etc.

Action.—Carminative, aromatic, stomachic and stimulant.

Preparations.—Powder, poultice, oil and confection.

Uses.—The cumin *seeds*, are largely used as a condiment or spice in curries; they are medicinally useful in hoarseness of voice, dyspepsia and chronic diarrhoea; the dose is from 10 to 30 grains. The seeds are also cooling in effect and therefore form an ingredient of most prescriptions for gonorrhoea; *externally* they are applied in the form of *poultice* to allay pain and irritation of worms in the abdomen; the seeds reduced to *powder*, mixed with honey, salt and clarified butter are applied to scorpion bites. The seeds mixed with lime juice are administered in cases of bilious nausea in pregnant females. While cumin seeds taken internally shortly after child-birth increases the secretion of milk. A quantity of the seeds lightly smeared with ghee put into a pipe and smoked relieves hiccup. A *confection* called *Jirakadi Modaka* is prepared thus:—Take of the three myrobalans, tubers of Cyperus rotundus (*mustaka*), watery extract of *gulancha*, pre-

pared talc, flowers of Mesua ferrea (*nagakesara*), leaves called *tejapatra*, cinnamom, cardamoms, cloves, coriander, ginger, long pepper, Oldenlandia herbacea (*parpati*), root of Andropogon muricatum (*usira*), Pavonia odorata (*bala*), and Plumbago zeylanica (*chitraka*), each one part, cumin seeds, nineteen parts or equal in weight to all the other ingredients; powder them all and mix. Add two parts of sugar to one of the powder and make into a confection with honey and clarified butter. Dose,—one drachm. This medicine is prescribed in chronic diarrhoea and dyspepsia with loss of appetite. An *oil* known as *Jirakadya taila* is used in eczema. It is made thus:—Take of powdered cumin seeds, eight tolas, minium or red lead, four tolas, prepared mustard oil three seers, water twelve seers, boil them together in the usual way for the preparation of medicinal oils —(Bhavaprakasa). The following powder is given in gonorrhoea and high-colored urine :—Take of Cuminum cyminum 4 parts, Calamus draco (Dragon's blood) 2 parts, Nitrate of potash 5 parts, Coriander seeds 5 parts and Rose buds 2 parts. Mix and make a powder. Dose :—grains 20.

Cuminum Nigrum.—See Nigella Sativa.

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245. CURCULIGO ORCHIOIDES & C. Uncifolia

(*N. O.*—AMARYLLIDEAE.)

Sans.—Hemapuspi ; Bhomitala ; Talamulika ; Musali. *Eng.*—Black musale. *Hind.* & *Guz.*—Musalikand ; Kalimusali. *Ben.*—Talamul ; Sadamusli. *Tel.*—Naelatadi-chettu or gadda. *Tam.* & *Mal.*—Nellapana Kilongu. *Can.*—Neladâli. *Mah.* & *Kon.*—Bhuyimâddi.

Habitat.—Hotter regions of India and Ceylon.

Parts Used.—Tuberous root.

Constituents—Resin, tannin, mucilage, fat, starch and ash containing oxalate of calcium etc.

Action—Bitter aromatic tonic, demulcent, diuretic and restorative.

Preparations—Confection and powder.

Uses—The *tuberous roots* constitute the (black) *kali musli* and the white variety *safed musli* of the bazaar. They are prescribed usually combined with bitters and aromatics in the form of *electuary* the dose being one tea-spoonful twice a day; sometimes the drug is given with milk and sugar in doses of two drachms in gonorrhoea, leucorrhoea and menstrual derangements. In cases of asthma, jaundice, diarrhoea and colic, the tubers are administered as follows:—They are washed and freed from rootlets, cut in slices by a *wooden* knife, dried in the shade and then given in doses of 180 grains beaten up with an equal quantity of sugar in a glass of milk in the form of a thick mucilage. The tuber forms an ingredient of several medicines intended to act as aphrodisiacs, of which the following are examples :--(1) Take of the root of Asparagus racemosus (*satavari*), Sphaeranthus mollis (*munditika*), *gulancha*, seeds of Butea frondosa (*hastikarna*), and the tuberous roots of *musali* equal parts; powder and mix. Dose is about a drachm with honey or clarified butter useful in the debility of old age. (Bhava prakash). (2) Take of *Kali musli*, *safed musli* (Asparagus racemosus). *Salebmisri* (Salep), *Talmakhana* (Hygrophila Spinosa), *Bijbund* (Polygonum aviculare), *Inderjava* (Holarrhoena antidysenterica), *Tudri surkh* and

Tudri, safed, (seed of Iberis Sp. yellowish red and white), *Dalchini* (Cinnamon), *Kalanjan*, *Sakakul*, *Baimansurkh* (red), *Baiman-sufed* (white) equal parts and *Misri* (sugarcandy or loaf sugar) 12 parts. Mix and make a powder. Dose.—grains 45 to 90 with milk.—(Zad-Garib.) (3) *Musalyadi Churna* containing Curculigo Orchioides, Tribulus terrestris, Bombax malabaricum, Mucuma prurians and Cocculus cordifolius is given in doses of 20 to 60 grains with milk in leucorrhoea and other menstrual derangements due to general debility.

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246. CURCUMA AMADA or C. Matico.

(*N. O.* —ZINGIBERACEAE.)

Sans.—Karpura haridra. *Eng.*—Mango ginger. *Ben.*—Ama-ada ; Pholiya. *Duk*—Amkiboki-adrak. *Hind.* & *Mah.*—Ama-haldi. *Mah*, *Can.* & *Kon.*—Amba-halad. *Tel.*—Shad-grandika. *Tam.*—Arukamlaka.

Habitat.—Bengal and hills on the West Coast.

Parts Used.—The rhizome.

Constituents.—Essential oil, resin, sugar, gum, starch, albuminoids, crude fibre, organic acids and ash.

Action.—Carminative, cooling, aromatic, bitter and astringent.

Preparations—Infusion & Paste.

Uses.—The *fresh root* is used as a perfume and as an ingredient in *chutneys* like ginger, also medicinally when fresh and dried. The *tubers* have an agreeable fragrant smell and aromatic taste. They are useful in prurigo. The *tubers* rubbed with the leaf-juice of Caesalpinia bonduc is given for worms; rubbed with the juice of Jasmina grandiflora into thin *paste* it is applied

to skin complaints of children characterised by small blebs into which heirs grow soon after *i. e.* 10 or 12 days after birth. The *infusion of the root* is employed to give the flavour of the mango artificially to confectionery. The rhizomes are also used *externally* in the form of *paste* as an application for bruises and skin diseases generally combined with other medicines used for improving the quality of blood.

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247. CURCUMA ANGUSTIFOLIA.

(*N. O.*—ZINGIBERACEAE),

Sans.—Tavakshiri. *Eng.*—Curcuma starch; East Indian Arrow-root. *Hind.*—Tikora. *Ben.*—Tikkur. *Mah.*—Tavakeera. *Tam.*—Artimavu; Kookai. *Mal.*—Koova. *Can.*—Koove-hittu. *Kon.*—Koove-pitto. *Ger.*—Schmal-blattrige kurkume.

Habitat.—A native of tropical Himalaya and Oudh. Other species which are the source of arrowroot grow wild in jungles in various parts of India, and they are the following:—C. Leucorhiza, C. Montana, C. Aromatica, C. Longa, C. Rubescens, and Hitchenia Caulina.

Parts Used.—The tubers.

Constituents.—Starch, sugar, gum and fat.

Action.—Cooling, demulcent and nutritious.

Preparations.—*Conjee* and Confection.

Uses.—Indian arrowroot is highly valued as an article of diet. It is largely manufactured and exported from Malabar and Travancore. The tubers are dried and powdered and a *flour* is prepared; and this starch forms the chief source of Indian arrowroot. It is an excellent diet in the form of *conjee* in cases of dysentery, dysuria, gonorrhoea, etc.; also useful in typhoid fevers, ulceration

of the bowels and bladder. In cases of difficult and painful micturition it is best administered in the form of thin *conjee* prepared like barley water with milk and sugar added. Made into a *confection* with the addition of a small quantity of cardamoms it forms a cooling, stomachic food useful in cases where a demulcent is needed, and in all cases where barley is indicated.

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248. CURCUMA AROMATICA.

(*N. O.*—ZINGIBERACEAE.)

Sans.—Vanaharidra. *Eng.*—Wild Turmuric. Yellow Zedoary, Cochin Turmuric. *Hind.*—Jangli haldi. *Ben. Guz. & Bom.*—Ban-halad. *Mah.*—Vedi halad *Tel.*—Adavipasupu. *Tam & Mal.*—Kattumanjal. *Can.*—Kadarasina. *Kon.*—Ranhalad.

Habitat.—Found wild all over in Bengal and largely cultivated in gardens.

Parts Used.—Tuber or rhizome.

Constituents.—A volatile oil, resin, starch, mucilage, sugar, gum, albuminoids and *curcumin*—a yellow coloring matter.

Action.—Tonic, stimulant and carminative.

Uses.—The rhizomes are of a pale yellow colour, have an agreeable fragrant smell and the *fresh root* has a camphoraceous odour. Its action and uses are similar to those of Curcuma Longa. The *dried rhizome* is used as an aromatic adjunct to other medicines used in skin diseases and impurities of the blood. In the form of powder in doses of 3 to 6 grains, it is given to promote eruptions in exanthematous fevers. It is also used externally, boiled in oil as an application to sprains and

bruises. Like C. Longa its chief use is as a dyeing agent.

249. **Curcuma Caesia,** a species of the same genus (*Ben.*—Nilkanth. *Hind & Guz.*—Narkachura; Kali haldi. *Mah.*—Kali-halad. *Tel.*—Manu-pasupu) is found cultivated in gardens in Bengal. It is one of the two Zerumbads of Persian writers on Materia Medica. It is chiefly used as a cosmetic. It is considered to have nearly the same medicinal properties as C. Zerumbet. It is used as a domestic remedy in the fresh state much like C. Longa. Its *paste* is applied to bruises, contusions and rheumatic pains.

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250. CURCUMA LONGA.

(*N. O.*—ZINGIBERACEAE.)

San.—Rajani; Gauri; Varnavat; Haridra; Nisha. *Eng.*—Turmuric. *Hind. Duk.* and *Punj.*—Haldi. *Kash.*—Lidar. *Ben. Mah. Guz.* & *Kon.*—Halad. *Pers.*—Serd-chubah; Dara-zerda. *Arab.*—Zirsud; Uruk-es-suff. *Tel.*—Pasupu; Haridra. *Tam.* & *Mal.*—Manjal. *Can.*—Haldi, Arasina. *Cing.*—Haradul; Khaha. *Burm.*—Tanun. *Malay.*—Kooneit. *Fr.*—Curcuma long.

Habitat—Extensively cultivated all over India.

Parts Used.—The tubers or rhizomes.

Constituents.—An essential oil 1 p. c.; resin, curcumin—the yellow colouring matter, turmuric oil or turmerol. The turmuric oil is a thick, yellow, viscid oil. The curry powder owes its aromatic taste and smell to this oil.

Action.—Aromatic, stimulant, tonic and carminative.

Preparations.—Powder, Paste, Ointment, Oil, Lotion, Inhalant and Confection.

Uses.—The *rhizomes* are employed largely as a colouring agent and condiment entering largely into the composition of Indian pickles and curry powders. The *juice* of the fresh rhizome is applied to recent wounds, bruises and leech-bites. *Internally* it acts as anthelmintic. The *root* is usefully administered in intermittent fevers. In doses of 15 to 20 grains twice a day it is given for flatulence, dyspepsia and weak state of the stomach; it is used both externally and internally in skin diseases due to impurity of the blood. A *paste* of turmuric and the leaves of Justicia Adhatoda (*vâsaka*) with cow's urine is rubbed on the skin in prurigo.— Chakradatta). Several other combinations of the sort are in vogue, such as turmuric and *nim* leaves, turmuric and the ashes of the plantain tree, etc. Turmuric is also given internally with cow's urine in prurigo and eczema. Mixed with gingelly oil it is applied to the body to prevent skin eruptions. Turmuric paste mixed with a little lime and saltpetre and applied hot is a popular application to sprains and bruises. In small-pox and chicken-pox a coating of turmuric *powder* or *thin paste* is applied to facilitate the process of scabbing, and *decoction* of turmuric (1 ounce of the bruised root to 20 ounces of water) is applied as a lotion to relieve the burning in catarrhal and purulent ophthalmia popularly known as "country sore eye." A piece of rag soaked in it, and kept constantly over the affected eye relieves the burning and moderates the urgency of the symptoms. Its *powder* is sprinkled on ulcers to stimulate them to healthy action.

Ghee mixed with powdered turmuric is given to relieve cough. A paste of turmuric alone or combined with the pulp of *neem* leaves is used in ringworm, obstinate itching, eczema and other parasitic skin diseases. In piles an *ointment* made of turmuric, hemp leaves, onions, and warm linseed oil gives great relief when the piles are painful and protruding. In pemphigus and shingles, the part first smeared with a thick coating of mustard oil and then dusted on with turmuric powder is cured within 3 or 4 days. In catarrh and coryza the *inhalation of the fumes* of the burning turmuric from the nostrils causes a copious mucous discharge and gives instant relief ; the *fumes* are also used to relieve hysterical fits. The inhalation is taken at night and no fluid is allowed for some hours afterwards. The *smoke* produced by sprinkling powdered turmuric over burnt charcoal will relieve scorpion sting when the part affected is exposed to the smoke for a few minutes. Turmuric and alum powder in the proportion of 1 to 20 is blown into the ear in chronic otorrhoea. With borax as a *paste* it is applied to reduce indolent swellings. It is given in urinary diseases. *Milk* boiled with turmuric rhizome added to it, and then sweetened with sugar is a popular remedy for cold. *Internally* turmuric is given in affections of the liver and in jaundice. The following *powder* is a good digestive:-Take of turmuric, long pepper, ginger, cardamoms, ten grains each in powder and black pepper powder five grains Mix well and make a compound powder. The following confection is highly recommended in obstinate skin complaints.—*Haridrakhanda.*—Take of turmuric 64 tolas, clarified butter 48 tolas, milk 16 seers; sugar 12 tolas and

boil them together over a gentle fire in an earthen pot. Then add black pepper, long pepper, ginger, cinnamon, cardamom, *tejapatra*, *baberang* seeds, root of Ipomea, Turpethum (*trivrit*) the three myrobalans, flowers of Mesuaferrea (*Nagakesara*), tubers of Cyperus rotundus (*mustaka*) and prepared iron, each 8 tolas in fine powder and prepare a confection Dose.--one tola every morning in prurigo, boils, urticaria and chronic skin eruptions —(Bhaishajyratnavali). A cure is said to be effected in 7 days.

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251. CURCUMA ZEDOARIA or Zerumbet or Amomum Zerumbet.

Sans.—Krachura ; Kachura, Shati. *Eng.*—The Round Zedoary. *Hind.*—Gandamasti ; Kakhur. *Ben.*—Sutha ; Sati.—*Pers.*—Jadvar khata ; Kazhur. *Duk.*--Katchoor. *Mah.*—Kuv ; Kachur, *Can.* & *Kon.*—Kachora. *Tel.*—Kichili-gaddalu ; Kachoeramu. *Tam.*--Kastori-manjal ; Nirvisham ; Pulan-Kizhanga ; Kichilic-kizhanga. *Mal.*—Pulan-kizhanna ; Adavi-kachhola.—*Burm.*—Thanu-wen. *Cing.*—Hinhurh. *Arab.*—Aurakula-kappura.

Habitat.—Cultivated in gardens in many parts of India.

Parts Used.—The tubers and leaves.

Constituents.—An essential oil, a bitter soft resin, organic acids, gum, starch, resins, sugar, curcumin arabins, albuminoids, crude fibre and ash.

Action.—Stimulant, carminative, expectorant, demulcent, diuretic and rubefacient.

Uses.—The *root* possesses an agreeable, camphoraceous smell. It is useful in flatulence and dyspepsia and as a corrector of purgatives. It is generally

chewed by Indians to correct a sticky taste in the mouth especially by singers for clearing the throat; it is also used in cases of irritation of the fauces and upper part of the wind-pipe. In cases of cold and fever it is given in *decoction* together with long pepper, cinnamon, liquorice and honey or sugar-candy to relieve cough and bronchitis; the *pounded root* is applied as a *paste* to the body; combined with alum it is applied to bruises. As demulcent expectorant and aromatic its dose is about one drachm. It is an odoriferous ingredient of the cosmetics used for the cure of chronic skin diseases caused by impure or deranged blood. The *fresh root* checks leucorrhoeal and gonorrheal discharges. For worms the *juice* from the tubers is given to children. It is generally used in combination with other medicines as also in the preparation of medicated oil. The *juice of the leaves* is given in dropsy. The *dry root powdered* and mixed with the powdered wood of the Caesalpinia sappan makes the red powder called *abir* which is mixed with water and thrown over the body during the Holi festival of the Hindus.

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252. CUSCUTA REFLEXA.

(*N. O.*—CONVOLVOLACEAE.)

Sans.—Amaravela. *Eng.*—Dodder. *Ben.*—Algusi; Haldi-algusilata. *Punj.*—Nilathari; Viradhar; amil; zarbuti (seeds), *Hind.* & *Punj.*—Akasbel; aftimun; Kasus. *Duk.*—Akas pawan; amalwel. *Guz.*—Akaswel. *Mah.*—Nirmuli. *Tel.*—Sitama purgonalu; *Pers.*—Tukhm-i-kasusa.

Habitat.—Common throughout India; abundant in Bengal plains. It has no root under the ground, but

only grows as a dodder on other plants, and hence called *akaswel* (sky-twiner) or *amarwel* (immortal twiner), because it grows during the rains and every year the growth is afresh on the same plant.

Parts Used.—The plant:—the seeds and stem.

Constituents.—Quercetin, resins and an alkaloidal principle called "Cuscutine" slightly bitter and soluble in ether and chloroform.

Action.—The plant is regarded as alterative, purgative and anthelmintic. The seeds are carminative and anodyne. The stem is purgative.

Preparations.—Cold infusion, decoction, powder and poultice.

Uses.—A *cold infusion* of the seeds is given as a depurative and carminative in pains and aches of the stomach. As *poultice* they are also applied locally. The *seeds* are used along with sarsaparilla to purify the blood. The *stems in decoction* are useful in constipation, flatulence, liver complaints and bilious affections. *Varalians* of the dodder are highly useful in piles. *Externally* they are used against itch and other skin diseases.

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253. CYCAS CIRCINALIS or C Inermes.

(*N. O.*—CYCADACEAE)

Hind.—Jangli-madan-mast-ka-phul. *Bom.*—Buzoorbutu. *Duk.*—Pahadi madan mastaka. *Mah.*—Malabari-supari. *Tam.*—Madanakamapu. *Tel.*—Ranaguva ; Kamakshi. *Mal*—Rinbadam ; Toddapana; Eenthakay. *Burm.*—Mudang. *Cing.*—Madoo-guss. *Goa.* Amdesamotapana.

Habitat.—Malabar coast and dry hills in west of Madras.

Parts Used.—Male bracts, the nuts and the stem.

Constituents.—The bracts, or scales contain in a dried state, much albuminous and mucilaginous matter soluble in water; but no alkaloid or other principles found that would account for its narcotic action. It yields a gum resembling tragacanth and also a kind of sago or flour made from the nuts and stem, and called *Indum podi* in Malabar.

Action.—The male bracts are used as narcotic; they have a property that intoxicates insects that rest upon them; also stimulant and aphrodisiac.

Uses.--The *bracts are powdered* up with other substances and made into a confection useful in seminal weakness. *Flour* made from this tree both from the nuts and the stem is reckoned superior to the flour of Caryota, but inferior to rice, and eaten by the hill-tribes and the poorer classes, when rice is scarce during famine-times. The fruit-bearing cone reduced to a poultice and applied to the loins removes nephritic pains.

Cydonia Vulgaris.—See Pyrus Cydonia.

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254. CYLESTA SCARIOSA.

(*N. O.*—Leguminoseae.).

Kon. & Mah.-Ran Ghevada.

Habitat.--This perennial twiner is found growing in the woods of the Koncan, Deccan, Canara and Orissa.

Parts Used.—The woody tapering root.

Constituents.—Tannin, starch and a soft yellow tenaceous resin, but no alkaloid.

Action.—Astringent.

Uses.—The *root* in the form of decoction is a remedy for dysentery & diarrhoea. The dose is from half to one ounce. *Externally* the root is applied as poultice, along with other drugs, to reduce tumours. The *root*, when cut gives out a reddish viscid juice which on drying becomes black and brittle and this may be seen adhering to the short pieces of the dry root, which are offered for sale in the bazaars.

Cymbopogon Citratus & C. Flexuosus or C. Schoenanthus.—See Andropogon Citratis.

Cynanthum Ipecacuanha or C. Vomitorum.—See Asclepias Asthmatica.

Cytisus Cajan.—See Cajanus Indicus.

255. CYNODON DACTYLON.

(*N. O.*—GRAMINEAE.)

Sans.—Granthi: Sveta; Doorwa; Bhargavi. *Eng.*—Huriallee grass; Couch grass; Creeping panic grass. *Hind. & Ben.*—Durba. *Tel.*—Garike; Haryali. *Tam.*—Arugu; Mooyarpul. *Can.*—Garikae; Ambate-hullu. *Mal.*—Karuka-pullu. *Kon.*—Jirbankura. *Mah.*—Haryali; Doorva. *Punj.*—Talla; Kabbar; Dub. *Fr.*—Chiendent. *Ger.*—Wucherndu Hundzahn.

Habitat.—This elegant perennial grass grows everywhere throughout India.

Parts Used.—The herb and the root-stalk.

Action.—The fresh juice is demulcent, astringent and diuretic. The plant is acid and haemostatic.

Uses.—The creeping *root-stock* is used medicinally. The *fresh expressed juice* of the grass is useful in haematuresis, in vomiting and as an application in catarrhal ophthalmia, also to cuts and wounds as it checks bleed-

ing; for this purpose bruised grass may also be applied; the *juice* when sniffed up in case of epistaxis proves a valuable styptic and stops bleeding. The fresh juice is used also in cases of dropsy and anasarca and in chronic diarrhoea and dysentery. The *decoction of the roots* is valuable in cases of vesical calculus and in secondary syphilis. A *cold infusion of the grass* stops bleeding from piles; it is generally given with milk; useful in dysuria and irritation of the urinary organs. The roots crushed and mixed with curds are given in cases of chronic gleet; the dose is two drachms of the root.

256. **Cynodon Linearis** is a species (*Sans.*—Nila-Durva) found in Bengal whose root-stalk is used like the leaves of C. Dactylon.

257. **Cynometra Ramiflora** is a species of the Leguminous Genus found in Western Peninsula and Malabar (*Mal.*—Iripa. *Tam.*—Irapu. *Ben.*—Shing.) the root of which has purgative properties. The leaves boiled in cow's milk and mixed with honey are applied to scabies, leprosy and other scaly cutaneous diseases. An oil is also prepared from the seeds and used for the same purpose.

258. **Cyperus Bulbosus** is a species belonging to Cyperaceae, growing in the sandy plains in Kathiawar and on the Coromandal coast (*Guz.*—Thegi.) the tubers of which are starchy and cooked and eaten like potatoes. They are of much value in famine times.

259. **Cyperus Canesceus** is a species found in Bengal and the East Indies where the leaves are used as a remedy for colic and amenorrhoea.

260. **Cyperus Distachyos** is a bush found in

Bengal where the leaves are used as diuretic and sudorific.

CYPERUS PERTENUIS; C. Scariosus; C. Hexastachyus.

(*N. O.*—CYPERACEAE.)

Sans.—Mustaka, *Bom.*—Musta.—*Can.*—Konnari-gadde. *Eng.*—Indian Cyperus, *Hind. Ben* & *Duk.*—Nagara-motha *Mal.*—Kora; Kizanna. *Mah.* & *Ben.*—Lavala, *Pers.*—Muskezamin. *Cing.*—Jata-maktu. *Tam.*—Mutta-Kachi *Tel.*—Kala-tunga; Muste.

Habitat.—Damp places in Bengal.

Parts Used.—The tubers.

Constituents—See C. Rotundus.

Action.—Refrigerant, aromatic, stomachic and alterative.

Preparations.—Decoction (1 in 20,) dose.—1 to 2 fluid ounces; Oil.

Uses—The *root* or *tuber* is given in torpid liver, chronic fevers dyspepsia and derangements of the bowels. In chronic fevers it relieves thirst and heat of the body. It is also useful in ascites and as anthelmintic for round worms. In conjunction with valerian the root is given in epilepsy. As astringent it is useful in diarrhoea. The *decoction of it* is used in gonorrhoea and in syphilitic affection. A decoction of the following powder is given in fevers:—Take of *Nagarmotha*, Solanum Indicum, Cocculus Cordifolius, ginger and embelic myrobalans each equal parts. Powder them all and divide into five parts. One part is taken daily in decoction with a little honey and long-pepper as a febrifuge. In dysentery

Nagarmotha, *Mocharas*, *Lodhra*, *Dhaitiphul* (flowers of Woodfordia Floribunda) unripe Bael fruit and the seeds of Holarrhena Antidysenterica are ground with whey and molasses and given in doses of 1½ drachms. The root yields an *oil* which is used as hair tonic and perfume, and it is used in the preparation of medicated oils.

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262. CYPERUS ROTUNDUS.

(*N. O.*—CYPERACEAE.)

Sans.—Mustaka Dhanakoota: Bhadramusti, *Eng.*—Nut-grass. *Hind.*--Korchi-jhar. *Ben.*—Moothoo. *Guz.* & *Mah.*—Barik motha. *Tel.*—Tungamusti. *Tam.*—Korai kilangu. *Can.*—Tangahullu; Koranari-gadde; Abdahullu *Mal*—Karimuttan *Cing.*—Kalanduru.

Habitat.—It is a plentiful species occurring throughout the plains of India.

Parts Used.—Tuber or bulbous root.

Constituents.--Fat, sugar, gum and carbo-hydrates; albuminous matter, starch, fibre and ash. There are traces of an alkaloid.

Action.--Stimulant, tonic, demulcent, diuretic-diaphoretic, astringent, emmenagogue and vermifuge.

Uses.—The *tubers* are useful in infusion in fever, diarrhoea, dysentery, dyspepsia, vomiting, cholera etc. The *bulbous roots* are scraped and pounded with green ginger, mixed with honey and given in cases of dysentery in doses of about a scruple. In larger doses it is used as an anthelmintic to get rid of worms. The fresh tubers are applied to the breast in the form of paste or warm plaster as a galactagogue. It is applied to scorpion

stings and when dried, to spreading ulcers. The following decoctions are recommended for use in fevers :—

(1) *Shadanga Paniya* :—Take of the tubers of Cyperus Rotundus, red sandal-wood, root of Andropogon Muricatus (*usira*), Oldenlandia herbaceæ (*parpata*), Pavonia Odorata (*bala*) and dry ginger each one drachm, water two seers; boil down to one seer. This decoction is given as a drink for appeasing thirst and relieving heat of the body in fever. It may be taken *ad libitum*.

(2) Take of *Motha* (Cyperus Rotundus) 5, *Bhuiringani* (Solanum Jacquini) 4, *Gulegaphij* (Gentian root) 4, *Gulancha* (Cocculus cordifolius) 4, Dried ginger 6, *Amala* (Oxalis corniculata) 6, Red sandalwood 4, and Poppy capsules 6 parts. Mix and make a decoction. To the decoction when ready add honey and long-pepper powder. Dose :—oz. ½ to 1½ oz. Useful in recurrent or relapsing fever.

(3) Take of *Valo* (Andropogon muricatus) 4, Cyperus Rotundus 5, Chicory 3, *Dhauriphula* (flowers of Woodfordia floribunda) 4, *Tukhm-e-khitami* (Marsh mallow root) 5, Common mallow 6, *Kala jeera* (Carum Nigrum) 7, Dried ginger 6, Anise seeds (Pimpinella Anisum) 6, Mirtle (Myrtus Communis) 4, Poppy Capsules 4, Cardamoms 6, *Phudino* (Mint; Spearmint) 4, Calumba root 6, *Gaozabana* (Onosma Bracteatum) 4, Pomegranate flowers 4, and sugar 10 parts. Mix and make a decoction in the usual way; dose :—oz. ½ to 1½ ozs. Useful in long standing fever, cachexia anorexia, chronic diarrhoea, and dyspepsia.

263. **Daedalacanthus Roseus** belonging to genus Acanthaceae (*Mah.*—Dasamuli "having ten roots") is a native of Western India. Its root boiled in milk is a popular remedy for leucorrhoea; dose is one drachm. In the southern Konkan it is given to pregnant cattle to promote the growth of the foetus.

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264. DAEMIA EXTENSA or Asclepias Echinata.

(*N. O.*—ASCLEPIADEAE.)

Sans.—Phala—antaka. *Hind.*—Utranajutuka; Sagovani *Punj.*—Trottoo. *Guz.*—Nagaladudheli. *Ben.*—Chhagal bati. *Sind.*—Kharyal; Dudhavela. *Kon.* & *Mah.*—Uttarani. *Tam.*—Uttamani; Veliparutti. *Tel.*—Jittupaku; gurtichettu; Dustapuchettu. *Can.*—Talavaranaballi; Juttuve; Halakoratige. *Mal.*—Veli-paritte.

Habitat.—Found throughout India.

Parts Used.—Leaves, roots and root-bark.

Constituents.—The leaves, like those of tobacco and adhatoda, contain an alkaloid named *Daemine* soluble in ether, alcohol and water and not crystallizable. The ash from the dried and powdered leaves was found to amount to 15.33 p.c. The root is also found to contain an alkaloid having similar properties.

Action—The plant is extremely irritant. The flowers and leaves are emetic, expectorant and anthelmintic. Its actions are similar to those of scammony.

Preparations.—Decoction of the leaves, dose:—1 ounce; Juice, of the leaves; dose:—1 drachm; Powder of the root or root-bark, dose:—5 to 10 grains. Oil and Poultice.

Uses.—A *decoction of the leaves* is given to children as an anthelmintic in doses not exceeding three table-spoonfuls; it or the *juice of leaves* is useful also in asthma. *Externally* the juice combined with lime is applied to rheumatic swellings. A mixture of the juices of these leaves and of the leaves of *Tulasi* plant (Ocimum Sanctum) obtained by squeezing them between the palms of the hands is a stimulating emetic; combined with ginger, the juice of the leaves is given in rheumatism. The *fresh leaves made into a pulp* are used as a stimulating poultice in carbuncle with benefit. The juice of the leaves is said to be employed in the preparation of a *medicinal oil* used in rheumatism, amenorrhœa and dysmenorrhoea and the *root-bark* is used as a purgative in rheumatic cases in doses of 1 to 2 drachms mixed with cow's milk.

265. **Dalbergia Emerginata.** (*Sans*—Krishna-sinsapa. *Ben.*—Kalasesso gachh; *Mah.*—Kalasinsapa. *Can.*—Kareyvadi) is a tree growing in Maharastra and in Bengal, useful as a bitter stimulant and appetiser in dyspepsia, diarrhoea, leprosy, obesity, worms etc.

266. **Dalbergia Lanceolaria or D. Frondosa,** is a beautiful plant of Leguminosae (*Hind.*—Bithua; Takoli. *Ben.*—Chakendia. *Nepal.*—Bander-siris. *Raj.*—Passi. *Bom.*—Jakoli; Harrani; Gengri. *Mah.*—Kanrehi; Dandusa. *Tam.*—Nalvalangee. *Tel.*—Erra-pachchari; Pedda sophora; Pasarganni) found on plains from Western Himalayas down to Ceylon. The bark, the oil obtained from the seeds, the leaves and the roots are employed medicinally. The bark along with that of Flacourtia Ramontchi is an external application during intermittent fever.

267. Dalbergia Oojeinensis is another species found in Bengal, Sub-Himalayan tract, Central India and West coast (*Sans.*—Tinisha: Sejanduna. *Ben.*—Jarul-gachh. *Hind.*—Sandan; Terrichcha. *C. P.*—Kalaphalas. *Mah.*—Syandan. *Bom.*—Tanach. *Tel.*—Tella-motuku. *Can.*—Kari-mutal), has stimulant and astringent properties. The *bark* when incised furnishes a kino-like exudation which is useful in dysentery, leprosy, leucoderma and gonorrhoea. A decoction of the bark is given when the urine is high colored. In the C. P. the bark is said to be used as a febrifuge.

268. DALBERGIA SISSOO or Sisu.

(*N. O.*—LEGUMINOSAE.)

Sans.—Kapila-sinsapa. (ash-colored). *Eng.*—Black-wood; Rosewood. *Hind.*—Sisam. *Ben.*—Sishu. *Punj.*—Tali-safedar. *Tam.*—Nuku-kattai. *Tel.*—Sissukarrha. *Mah.*—Pivala-sesaba. *Can.*—Hambadavu.

Habitat.—Bombay Presidency.

Parts Used.—The bark, roots, leaves and mucilage.

Action.—The bark or raspings of the wood are alterative. The roots are astringent.

Uses.—The *dried bark* and *fresh leaves* are used as a local astringent and hæmostatic in various forms of hæmorrhages, epistaxis, hæmostatic hæmoptysis, hæmatemesis, menorrhagia, bleeding piles, and also for varicose veins. The *raspings* of the wood are useful in leprosy, boils eruptions and to allay vomiting. The *oil* is applied externally in cutaneous affections. The *mucilage* of the leaves mixed with sweet oil is a good application in excoriations. A *decoction* of the leaves is given in the acute stage of gonorrhoea.

269. Dalbergia Spinosa is a species met with in the tidal forests along the coasts from Chittagong to Tenasserin ; also in the Ghats and on the coast of the Western Peninsula. The roots of this tree absorb alcohol and a teaspoonful of the powder of the root in a tumblerful of water is said to be sufficient to destroy in less than half an hour the evil effects of alcohol even in cases bordering on delirium tremens.

270. Dalbergia Sympathetica is a plant of the Hills in the Western Himalayas. (*Mah.*—Chinchino; Pentgul. *Goa.*—Titabli. *Kon.*—Katikamto). The leaves are used in Goa as an alterative. The bark is used as a *lep* to remove pimples. The foliage resembles that of the Tamarind and is eaten by cattle.

271. Dalbergia Volubilis is a tree of the Sub-Himalayan tract from Kumaon eastwards, Central and Southern India. (*Mah.*—Alli; Manganver. *Tel.*—Bandeegurjan. *Mal.*—Rangdi); the juice of the leaves of which is applied to aphthae and used as a gargle in sorethroat. The root-juice with cumin and sugar is given in gonorrhoea.

272. DATISCA CANNABINA.

(*N. O.*—DATISCEAE).

Hind.—Akalbar. *Punj.*—Bhangjala ; Bujrbanga. *Cash.*—Vagtangel ; Teherg.

Habitat.—Tropical and Sub-tropical Himalaya from Cashmere to Nepal.

Parts Used.—The herb, roots and bark.

Constituents.—The leaves and roots contain a glucoside *datiscin*, a resin and a bitter principle. Datiscin occurs as colorless silky needles or scales, little soluble in

cold water, sparingly so in warm water and ether. The crystals are neutral and bitter in taste.

Action.—Bitter, stomachic, alterative, expectorant and laxative.

Preparations.—Infusion (1 in 10) of the plant; dose:— ½ to 1 ounce; Powder, dose.—5 to 15 grains.

Uses—The infusion of the herb is given in scrofula, intermittent fever with vomiting and in catarrh of the throat and the bronchi. The bruised root and leaves are applied to the head in headache as sedative.

273. DATURA ALBA & D Fastuosa or D Nigra (Stramonium); D. Metal; D. Nilhummatu.

(*N. O.*—Solanaceae.)

Sans.—Kanaka-dattura; Dhustoora; Krishna-unmatta. *Eng.*—Thornapple. *Hind. Duk. Ben. Punj.* & *Guz.*—Dhatoora. *Pers.*—Tatulah; Kouzmasab. *Arab.*—Jouz-ula-mathil. *Tel.*—Umetta: Dhaturamu. *Tam.*—Umattai. *Can.* & *Mal.*—Ummatum. *Kon.*—Dutro. *Cash.*—Dathir. *Burm.*—Padayin. *Cing.*—Attana. *Malay.*—Kachubang. *Fr.*—Datura fatesux *Ger.*—Weichhaariger stechapfel.

Habitat.—This plant exists in different species distinguished by prefixes denoting the colour of the flowers—white, purple, etc. These species are found growing commonly in waste places throughout India, from Cashmere to Malabar.

Parts Used.—The whole plant.—leaves, seeds and roots; the dried leaves and the dried ripe seeds.

Constituents.—The leaves contain a poisonous alkaloid—*daturine*, mucilage, albumen and ash 17 p. c. which contains potassium nitrate 25 p. c. The seeds

contain daturine, resin, mucilage, proteids, malic acids, scopolamine and ash 3 p.c. Daturina-daturin an alkaloid identical with atropine combined with malic or daturic acid and consisting of hypocyamine and atropine. It is a tropate of tropin and occurs in light feathery crystals; dose — $\frac{1}{120}$ to $\frac{1}{40}$ grain in solution generally given with dilute sulphuric acid.

Action.—The plant as a whole has narcotic, anodyne and antispasmodic properties, analogous to those of belladonna; it causes dilatation of the pupil when locally applied in watery solution equal in effect to atropine solution of the strength of 1 in 120. The dried seeds are thought to be more powerful soporific than the leaves.

Preparations :—Tincture, Extract, Liniment, Pills, Paste or Plaster, Poultice, Decoction, Confection, medicated Oil and Ghee.

Uses.—The different species of this plant possess the same medicinal properties although the purple variety is generally regarded as the more valuable. Much caution is necessary in its employment as, in overdoses, it acts as a violent narcotic poison. This plant has long been noted for its intoxicating and narcotic properties; it produces a temporary insensibility in ordinary doses. The *seeds* are in popular use in India by the dissipated and the depraved in combination with *sabja*, toddy, *majum*, *ganja* and the like to increase their stupefying effect. The *smoking* of the dried leaves and stem (10 to 20 grains to begin with, subsequently increased to 30 grains) in a pipe or in cigarettes is found to relieve spasmodic asthma and kindred affections. When the leaves fail the dried seeds may be tried. The earlier in the attack it is employed the greater

are the chances of success. A good plan for the asthmatic is to adopt the habit of smoking the drug the last thing at night whether an attack is threatening or not; at any rate he should keep a cigarette or a pipe of it already filled and ready by his bed-side for using it immediately on the commencement of the attack. But in all cases it should be immediately discontinued if it produces giddiness, a feeling of sickness or any other unpleasant symptom. The smoking has also proved beneficial in chronic coughs, hard and dry, with violent paroxysms and scanty expectoration.

For rheumatic swellings of the joints, lumbago, sciatica, neuralgia, painful tumours, nodes, glandular inflammations such as mumps &c., the *local application* of datura leaves relieves pain, when applied in the form of *poultice* (made by bruising the fresh leaves into a pulp and mixing them with the aid of a little water, with an equal weight of rice flour) or *epithem* which consists of steeping a few entire leaves in arrack or any other spirit and placing them whilst wet over the seat of pain and securing them in that position by a bandage or as *fomentation* made by infusing the leaves in boiling water in the proportion of one ounce to each pint of liquid, and applied as hot as can be borne by means of two or more thickly folded clothes or preferably flannels alternating with one another. The liniment (prepared by macerating for seven days one ounce of the bruised seeds in a pint of sesamum or or other bland oil and straining) is also similarly useful. These preparations are useful in relieving the pain attendant on painful or difficult menstruation; and in some painful affections of the uterus they are more advantageously placed on the lower part of the abdomen. They

also prove beneficial especially the liniment in relieving neuralgic pains, especially of the face; it is well rubbed in over the seat of pain and along the space immediately in front of the ear or rather in the narrow space between the ear and the jaw.

The tincture of datura (1 in 8) is a useful and cheap substitute for opium, twenty drops of the tincture being equal to one grain of opium; dose of the tincture is from 5 to 10 drops. The *extract* is a convenient substitute for the extract of belladonna in $\frac{1}{4}$ to $\frac{1}{2}$ grain doses employed successfully in mania and epilepsy. "Mixed with glycerine it may be applied to prevent mammary abscesses. In tetanus or lock-jaw consequent on a wound, apply locally the poultices of the leaves to the wound previously cleansed by the irrigation of tepid water and renew them three or four times a day, and internally administer the tincture of datura, in doses of 20 to 30 drops in water, three or four times daily, regulating the dose according to effect produced, and continue (unless the spasms previously yield) till the full dilatation of the pupil is produced with some degree of giddiness, drowsiness or confusion of ideas; then stop the medicine;" this is recommended in the absence of more effective agents. "If the spasms abate *i.e.*, if they recur at more distant intervals and are less severe and prolonged when they do occur, the medicine in smaller doses at longer intervals may be continued till the spasms cease altogether; but if, under the use of the remedy, after it has produced its specific effects on the system the spasms shew no sign of abatement, no good but perhaps harm will result from continuing it." In addition to the above

means *datura liniment* should be well rubbed in along the spine several times daily. The further details of treatment are the same as those advocated in the use of belladonna. "Employed as above directed, datura may be used with safety, provided that the case is carefully watched by the doctor and the medicine administered or discontinued on the full development of its physiological effects." In cases of guineaworm a *datura poultice* is said to be most useful in relieving the pain and hastening the expulsion of the worm. Roasted leaves applied to the eyes give relief in ophthalmia; similarly they are useful in enlarged testicles, boils, etc.

The *fresh juice* of the leaves is a popular household application to subdue pain and inflammation in glandular swellings such as mumps, in ophthalmia, ear-ache, tooth-ache, to relieve pains of gout and rheumatism and to inflamed breasts. The fresh juice may be used alone or mixed with opium. The leaves are also applied as anodyne poultice to inflamed breasts to check the inflammation and excessive secretion of milk. A *paste* made of turmuric and datura fruits is also a useful application in such cases. The *leaves boiled in oil* or the *oil* itself are a good application to haemorrhoids, anal fissures and other diseases of the rectum leading to tenesmus; an *oil* prepared by boiling datura seeds and sesamum oil with an alkaline water made from the ashes of Colocasia Indica (*Manaka*) is used in psoriasis. The oil is also rubbed on in rheumatic and other pains of the limbs, &c.; applied also in skin diseases as pediculi, lice etc. Internally the *juice* of the leaves is administered with curdled milk in gonorrhoea. It is also a popular internal remedy for the prevention of

hydrophobia. The treatment consists in giving the medicine previous to the time of the development of hydrophobia. The treatment is to give the following medicine two weeks after the patient has been bitten, *i.e.*, between the 15th and 25th days :—In the morning after the 15th day a dessertspoonful of wood charcoal powder is given; half-an-hour after an ounce of the juice of the black datura leaves is given which is soon after followed with palmyra jaggery or something else to check vomiting. Then the patient is bound lest he does mischief to others and is kept in the sun for 4 or 5 hours until noon. Then, the patient gradually becomes mad and does many things like the mad dog (evidence of the patient having been bitten and of his total recovery). In the afternoon many pots of cold water are poured over his head although this causes great annoyance to the patient and he resents it to the utmost. Food is now given such as salt-fish, brinjal, horse-gram, Bengal-gram, &c., &c. The patient is then considered out of danger and is given a simple light diet. In case of treating a person already suffering from hydrophobia the front part of his head is scratched with a lancet so as to make it bleed a little and the ground leaves of the black datura rubbed and the juice given internally.

The above method of treatment is one of the several modes employed by Vaidyans. The root of Datura alba is boiled in milk and this milk is administered with the addition of clarified butter and treacle in insanity. The seeds, on account of their narcotic effect are used by criminals such as thieves, robbers etc., in sweetmeats, *hooka*, *bhang* and in spiritous liquors also with the aid of their

smoke, in order to stupefy their victims. The seeds are also considered to have a strong aphrodisiac effect. They are employed by Hakims in the preparation of a medicated ghee; it is recommended to be rubbed on the genitals twice a day to stimulate them, and about 4 grains of the ghee is also given internally once a day. The seeds ground and made into *pills* and laid upon the decayed tooth are said to relieve tooth-ache, but greatest caution should be taken in applying the medicine, since it is a powerful narcotic drug. The seeds are useful as astringent in bowel-complaints, also fevers with catarrhal and cerebral complications, skin diseases as lice etc., in which a paste of the seeds and juice of the leaves form useful applications. The following are useful domestic preparations:—(1) Dried datura leaves, 15 grains are smoked in a pipe for relief of asthma and paroxysmal cough. (2) Take of datura leaves 1 oz. and boiling water 1 pint; for use as a hot fomentation; in cases of dysmenorrhoea, lumbago and pleurodynia. *(3)* Take of the seeds of Datura 2, Mercury sulphide 1, *Trikatu* (compound preparation of equal parts of *Pipali*, *Miri*, & *Sunta*) 1 and Aconite 1 part. Mix, rub the whole together with lemon juice, and make a pill mass; dose:—5 to 8 grains; useful in fever, catarrhal bronchitis and cough. (4) *Kanaka Asava* is a well-known preparation useful in cough, asthma and phthisis, given in doses of half to two tolas twice after meals. The chief ingredients of it are:—Datura, Adhatoda vasaka, Glycyrrhiza glabra, Piper longum, Woodfordia floribunda and Vitis Vinifera.

274. DAUCUS CAROTA; D. Vulgaris.

(*N. O.*—UMBELLIFERAE.)

Sans.—Shekhamulama : Garijara. *Eng.*—The Carrot. *Hind. Mah. Can. & Ben.*—Gajar. *Arab.*—Jazar. *Pers.*—Gazar; Zardak. *Tel.*—Pita-kandc : Gajjara-gedda. *Tam.*—Gajjara kilangu. *Can*—.Gajjari ; Manjal mulangi. *Cash.*—Mormuj ; Bulmuj. *Fr.*—Carotte Cultive. *Ger.*—Gemeiner Mohre ; Karotti.

Habitat.—Indigenous to Cashmere and Western Himalaya ; now largely cultivated in India for culinary purposes.

Parts Used.—The root and the fruit.

Constituents.—The root contains carotin, hydrocarotin, sugar, starch, pectin, malic acid, lignin, albumen, extractives, salts and a volatile oil. The fruit contains volatile oil and a fixed oil ; the two principal constituents are a terpene belonging to Wallach's pinene group and an oxygenated body standing in near relation to cineol. Carrots are exceptionally rich in iron, a small proportion of which exists dissolved in cell-sap and which is entirely precipitated by boiling.

Action.—Carrot has a beneficial influence on the kidneys and prevents the brick-dust sediment some times found in the urine. As antiseptic it is said to prevent putrescent changes within the body. The seeds are used as aphrodisiac and nervine tonic. Carrots cleanse the blood.

Preparations.—Infusion (1 in 10), dose—½ to 1 oz ; Fl. Extract, dose :—5 to 30 minims ; Powder.

Uses.—The seeds are used for producing abortion. The fruits are recommended in chronic diarrhoea. A

decoction of carrot is a popular remedy for jaundice in Europe. Externally the fresh *root* when scraped forms a good stimulating poultice for foul ulcers. The raw rasped carrot made into an ointment with lard is much used in burns and scalds. Carrots are said to beautify the complexion.

275. **Delphinium Brunonianum** (*Kumaon.*—Nepari. *Gharwal*—Kasturi. *Ravi.*—Sapfulu. *Pangi.*—Mundwal. *Hind*—Samp-phali) is an erect herb of the Ranunculaceæ family met with in the Punjab, Himalaya and Western Tibet, the leaves of which have a strong scent of musk and are offered to idols. The juice of the leaves destroys ticks in animals especially in the sheep. The plant is considered so poisonous that the dew from the leaves falling on grass is said to poison cattle and horses.

276. **Delphinium Caeruleum** is another species of the same Family met with in the same region from Kumaon to Sikkim and known in the Punjab as ***Dakhanga***, the root of which is used as an application to kill maggots in the wounds of goats.

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277. DELPHINIUM DENUDATUM.

(*N. O.*—RANUNCULACEAE.)

Sans.—Vishalakarani; Nirvishi. *Pers.*—Mafarfin. *Arab.*—Zhadvar; antila. *Nepal.*—Nilobikh. *Bom.* & *Hind*—Jadwar: Nirbishi.

Habitat.—Punjab, West temperate Himalaya.

Parts Used.—Tubers and seeds.

Constituents.—Some species contain the alkaloids *delphinine* and *staphisagrine* both soluble in alcohol

In ether delphinine is soluble but not staphisagrine. An alkaloid *delpho-curarine* (Merck) has been extracted from the root.

Action.—It is considered to be a great antidote to poison particularly snake poison and the poison of aconitum ferox. In action it is alterative, stomachic, tonic and anodyne. The alkaloid *delphinine* is an antidote against muscarine and digitaline; *staphisagrine* acts like curare and paralyses the motor nerves.

Preparations.--Decoction (1 in 10), dose—2 to 4 drachms; Powder, dose—grs., 2 to 5; Pill.

Uses.—The *root* is chewed to cure toothache. In the form of *decoction of the rootlets* it is used as a tonic in doses of 2 to 4 drs., during convalescence from fevers. As an alterative it is given in syphilis and rheumatism. (This is said to be the medicine used by monkey-physician Susena and brought by Hanuman from the mountain of Gandhamadan to revive Laxuman who had fallen wounded by the deadly arrow of Ravan). The following two preparations are generally recommended for use:— (1) Decoction :—Take of the tuber *Jadwar* 5 drs; *Gaozabana* (stems and leaves of Onosma Bracteatum) 2 drs. Make a decoction in the usual way; used in nervous diseases, paralysis, low fevers and chronic liver diseases. Dose:—2 to 3 drs. (2) Pill:—Take of *Jadwar* 1 dr.; Amber (Cetacea) grs., 10; *Kesara* (Saffron) dr. ½; rub them together and mix with rose water to make a pill mass; dose:—grs., 2 to 5; used as a tonic in diseases of the heart and brain, in spermatorrhoea and in weakness of the genitals.

278. DENDROBIUM MACRAEI.

(*N.O.*—Orchideae.)

Sans.—Jivanti; Jivani; Jivaniya; Jiva shresta; Sàka-shresta; Yasasvini; Jivabhadra; Mangalya. *Hind.*—Jaivanti; Jiba; Sag. *Ben.*—Jebai.

Habitat.—A much branched plant often found on Jambul trees; Sikkim, Khassia Hills, Concan, Niligiri Hills.

Parts Used.—The plant, root and stems.

Constituents.—Two resinous principles termed *alpha* and *beta*, *Jibantic acids* and an alkaloid called *Jibantine*. The *B* acid is bitter and soluble; the *A* acid is insoluble in ether and slightly bitter.

Action & Uses.—As a tonic it is given in debility due to seminal discharges. It is described by Sanskrit writers as cooling, mucilaginous, light, strengthening and *tridoshagna* (curer of the disorders:—*Vata*, *pitta* and *kuffa*. The whole plant is used in decoction along with other drugs having similar properties.

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279. DERRIS ULIGINOSA.

(*N.O.*—Leguminosae).

Ben.—Penlata. *Mah.*—Kajarvel : Kirtana (worm-killer).

Habitat.—East Himalaya, Western Peninsula and Ceylon.

Parts Used.—The bark.

Constituents.—The bark contains a neutral crystalline principle, wax, two resins, two colouring matters, and alkaloid and glucose, an acrid glucoside allied to saponin, gum and mineral matter 8 p.c.

Action,—Alterative and insecticide.

Preparations.—Decoction (1in 10), dose :—2 to 8 drs; medicated oil or *ghrita*.

Uses.—The bark is used as a fish poison and also to kill worms and insects which infest leaves and flowers. As an alterative it is given in rheumatism, chronic paralysis and dysmenorrhoea in the form of a *ghrita*, combind with asafoetida, garlic, plumbago root and used externally in rheumatism.

Desmodium Gangeticum.—See Hedysaram Gangeticum.

280. **Desmodium Gyrans** is a small Leguminous herb found in upper India distinguished by the spontaneous movements of its leaflets and is known as telegraph plant.

281. **Desmodium Triflorum** is also of the same Genus, growing about 2 to 3 feet high throughout tropical India (*Hind.*—Motha; Kadaliya. *Ben*—Koolaliya. *Punj.*—Chamyar; Marara. *Tel.*—Moohoodoo; Moordoo. *Mah&Kon.*—Ran-methi. *Pers.*—Muskh-zamin. *Arab.*—Sad-koofi *Cash.*—Chumkat. *Tam*—Siru-pullady.) Its roots are considered carminative, tonic and diuretic and used in bilious complaints. The leaves are galactagogue; ground with cow's milk they are given daily in the morning. They are also given to children for diarrhoea due to indigestion and also in convulsions. The fresh plant well bruised, its juice is applied to abscesses and wounds that do not heal readily. It is reputed to have diuretic action also.

282. DICHROSA FEBRIFUGA.

(*N. O*—SAXIFRAGACEAE.)

Hind.—Basak. *Bhutan.*—Singanamook. *Lepcha.*—Gebokanak.

Habitat.—Himalayan regions; the Khasia mountains.

Parts Used.—The root and the leaves. "The root-bark occurs in the form of small chips and has a faint aromatic odour. It is soft and corky in structure and almost tasteless. If chewed it causes a sensation of nausea."—(Dymock).

Constituents.—"The root-bark contains a crystal line glucoside termed "*dichroin*" probably the active principle. It also contains another crystalline principle insoluble in water but soluble in alkaline fluids. It does not contain any tannin."—(Sanyal).

Action.—Emetic and febrifuge.

Uses.—It is generally given in the form of decoction of the root in fevers whether quotidian, tertian or quartan. The decoction first acts as an emetic and is thus supposed indirectly to carry off the fever by natives of Sikkim and Bhutan where it is generally used. The drug taken in the crude state causes nausea, vomiting and depression of the circulation.

Dichrostachys Cinerea.—See Mimosa Cinerea.

Dilivoria Ilicifolia.—See Acanthus Ilicifolia.

283. DILLENIA INDICA or D. Speciosa.

(*N.O.*—DILLENIACEAE.)

Sans.—Bhavya. *Hind.* & *Ben.*—Chalta. *Monghyr.*—Chilta *Assam.*—Chalita; Oteneah. *Santal.*—Korkot. *Garo.*—Panpui. *Uriya*—Rai; Oao. *Nepal.*—Rampha. *Lepcha.*—Phamsikol. *Bom.* & *Mah.*—Karambel; Moto Karmal. *Tam.*—Uva. *Tel.*—Pedda kalinga, *Can.*—Bettakanagala. *Kon.*—Kadukanagala; Vadlikarmal. *Cing.*—Hondapara; Wampara.

Habitat.--Tropical forests in the western Peninsula, Behar and the Himalayas from Nepal to Assam; and from Sylhet to Ceylon.

Parts Used.--The fruit, the bark and the leaves.

Constituents.—The inner kernels consist mostly of pectous matter, of a jelly-like consistence. The chief ingredients of the calyces of the fresh ripe fruits are tannin, glucose and malic acid; but their percentage is much greater in the dry calyces than in the fresh ones.

Action & Uses.—The juice of the fruit mixed with sugar and water is used as a cooling beverage in fevers and as a cough-mixture. The bark and the leaves are astringent. The fruit is slightly laxative, but is apt to induce diarrhoea if too freely indulged in.

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284. **Dioscorea Aculeata** (*Sans.*—Alu; Madhvalu. *Eng.*—Sweet yam. *Ben.*—Maualu.); **D. Globosa** (abundantly in Bengal; *Sans.*—Pendalu. *Eng.*—Globoseyam. *Ben.*—Chuprialu) used in intestinal worms, leprosy, gonorrhoea, piles, abdominal tumours and poison; **D. Purpurea** found abundantly in Bengal; (*Sans.*—Raktalu. *Eng.*—Red yam. *Mah.*—Ratalu) are the species of the genus Dioscorineae. They are important as a source of food, and are used also medicinally on account of their acrid or bitter nutritive and aphrodisiac properties, useful in bile, burning, phlegm and eye diseases.

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285. **Dioscorea Bulbifera** in its wild state is extremely bitter; the small potato-like *tubers* on the vine dried and *powdered* are used as application to sores and

are given internally in 1 drachm doses with a little cumin and sugar in milk as a remedy for syphilis and for dysentery. The *powder* made into a bolus with butter is given to check diarrhoea. The *roasted tubers* of the cultivated variety made into balls with ghee and sugar-candy are a reputed remedy for piles. Under cultivation the plant loses its bitterness and is much grown for the tubers which are roasted and eaten.

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286. **Dioscorea Triphylla** is very acrid and its tubers are sometimes used as a plaster to disperse swellings. The tuber is used in Burma as a poison and its Burmese name is *choo-ay-go*. In Sanskrit it is called *pashpoli* (strangle cake). When taken internally it causes great irritation in the mouth and throat, vomiting of blood, a sense of suffocation, drowsiness and exhaustion; and it is said that a piece of the tuber, the size of an apple is sufficient to cause death in 6 hours. Neverthe-less the Burmese use it as an article of food after it has been cut in thin slices, repeatedly washed and steamed in an earthen pot. The constituents in D. Alata and D. Edulis found by Payen are respectively:—Water 79.64 & 60·72; Nitrogenous matter 1.93 & 4·48; Nitrogen free extractive 17·33 & 32·47; and Ash 1·10 & 0·89; and Fat 0·35 and Cellulose 1·09, in D. Edulis only. In dry substances, Nitrogen is 1.52 in D. Alata and 1.82 in D. Edulis, and Carbo-hydrates in D. Edulis only are 82.66. The nitrogen free extractive of D. Alata contained cane-sugar 4.79 per cent, cellulose 18 per cent and starch 25·19 per cent.

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287. DIOSPYROS EMBRYOPTERIS; D. Glutinosa; D. Cordifolia; D. Urginiana.

(*N.O.*—EBENACEAE)

Sans.—Tinduka. *Eng.*—Indian Persimon; Wild mangosteen. *Ben.*—Gaba. *Hind.*—Taindu. *Mah.*—Timar; Temburani. *Kon.*—Bandârooku. *Guz.*—Temru. *Tam.*—Tumbika Tumbilik-kay. *Can.*—Bandadamara. *Tel.*—Tumil; Tumikichettu. *Mal.*—Panichhi maram. *Fr.*—Plaque-miner visqueux.

Habitat.—Throughout India, especially in Bengal.

Parts Used.—The fruit, the bark and the dried seeds.

Constituents.—Tannin, pectin and glucose. The unripe fruits, flowers, and bark contain a large quantity of tannin. The fruits contain about 12.8 p. c. astringent acid closely related to gallo-tannic acid.

Action.—The bark and the unripe fruit have astringent and styptic properties.

Uses.—An *infusion or decoction of the rind of the fruit* is useful in chronic dysentery and diarrhoea. The *bark* is made into a *paste* and applied to boils and tumours. The infusion of the fruit is used as a gargle in aphthae or stomatitis and sore throat. A solution of one ounce of the extract Diospyros in a pint of water is a valuable vaginal injection in leucorrhœa. The *juice of unripe fruit* is given in chronic diarrhœa and dysentery; it is also used in hæmorrhages from the internal organs; applied to fresh wounds it acts as styptic by checking the bleeding. The *ripe fruit* is edible and useful in diseases of the blood, gonorrhœa and leprosy. The *oil*

extracted from the seeds is also used in dysentery and diarrhœa. The *seeds* are also given in diarrhœa as an astringent. The *bark* is used in intermittent fevers, in the form of infusion.

288. **Diospyros Malabarica** is a species found in Malabar where its young leaves and fruits are used in aphthae and ophthalmia ; the bark in fever and gastralgia and the seeds yield an oil which is employed as a mild purgative.

289. **Diospyros Melanoxylon** (*Sans.*—Tumvuru. *Fr.*—Plaqueminier-a-bis noir. *Ger.*—Schwarzholzbaum) is a species found on the Coromandal coast where the astringent bark is applied to ulcerations, and mixed with black-pepper it is given in dysentery. The tree supplies a fine ebony wood.

290. **Diospyros Tomentosa.** (*Sans.*—Kaka-tinduka. *Ben.*—Makra-gav.) is a species found in most parts of Bengal and U.P., the raw fruit of which is "acrid, costive and alleviative of the vitiated wind." The ripe fruit is "alleviative of vomiting and bile; it is a little phlegm-exciting"—(Kaviraj N. N. Sen Gupta.)

291. **Diplospora Sphaerocarpa** (*N.O.*—Rubiaceae) is found in the Western Ghats from Bombay southwards. The berries of this tree are known as wild coffee. The percolated liquor from roasted and powdered seeds has a remarkable pleasant taste having a marked flavor of coffee. The seeds contain an alkaloid which can be separated in the same manner as caffeine, an astringent acid, an aromatic body, some fat, one or more sugars and 4 p.c. of mineral matter.

292. Dipterocarpus Camphora.—See Camphora Officinarum.

293. Dipterocarpus Tuberculatus of Chittagong and Burma yields an oleo-resin which is used with asafoetida and cocoanut oil as an application for large ulcers.

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294. DIPTEROCARPUS TURBINATUS; D. Incanus; D. Laevis; D. Alatus.

(*N. O.*—DIPTEROCARPEAE.)

Eng.—Gurjun oil tree, Wood oil tree. *Hind & Ben.*—Garjan; Tihya-garjan; Teli-garjan. *Cing.*—Horatel. *Burm.*—Kanyensi. *Mah.*—Duhun-el-garjan. *Tam.*—Yennar.

Habitat.—Forests of Eastern India from Bengal, Burma to Singapore.

Parts Used.—The oleo-resin (the balsamic exudation from the trunk). This thick honey-like oleo-resin or liquid is known as garjan balsam. It is usually found in the bazaars in three principal varieties:—the pale, the red or reddish brown and the black or dark-brown.

Constituents.—The balsam contains an essential volatile oil, also a dry semi-transparent resin containing a crystallizable acid, garjanic acid and volatile matters.

Action.—Stimulant, diuretic, demulcent and alterative. It is excreted by the genito-urinary tract which it stimulates and renders antiseptic. It has copaiba-like odour and taste without the persistent acridity of copaiba. It is soluble in water, benzol, chloroform and essential oils. It has all the advantages of copaiba as an expectorant without the disadvantage of exciting an eruption.

Uses.—Half to two drachms of the *balsam* in an ounce of the malt extract three times a day given in cases of chronic bronchitis acts admirably. Its essential *oil* has been successfully administered in the treatment of gleet, gonorrhoea in the advanced stages, leucorrhoea and other vaginal discharges, leprosy and certain other skin diseases. The dose is about a tea-spoonful twice or thrice daily, given floating on *omum* or other aromatic water like dill water or made into an emulsion with 3 to 4 times the quantity of lime water, or in mixture containing 1 drachm each of the oil and mucilage in an ounce of dill water. The *oleo-resin* is applied to indolent ulcers, psoriasis, leprosy etc., in the form of an *emulsion* or *ointment* made with three parts of lime water to one of the oil; in leprosy the affected parts are rubbed with it thoroughly and diligently twice a day and each time for about two hours; also internally it is given in a mixture containing a drachm each of the oil and mucilage with 4 times the quantity of lime water twice daily, better with the addition of 5 to 10 drops of chaulmoogra oil to each drachm of the garjan oil.

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295. DODONAEA VISCOSA;
D. Angustifolia.
(*N. O.*—SAPINDACEAE.)

Sans.—Sanatta ; Aliar. *Punj.*—Ban-mendru ; Dhasera ; Dawaka jhar. *Bom.* & *Mah.*—Zakhmi ; Bandari. *Tam.*—Virali. *Tel.*—Bandaru. *Can.*—Bandrike. *Cing.*—Eta ; Warella.

Habitat.—Throughout India, from the Indus eastwards and southward to Ceylon and Malacca.

Parts Used.—The leaves.

Constituents.—The leaves contain 2 acid-resins, gum, albumen, tanin and ash; no alkaloid. Of the two resins one is insoluble in ether; both are soluble in chloroform, alcohol, liquid ammonia and in fixed alkalies.

Preparations.—Juice, powder, poultice and tincture (1 in 10) dose—15 to 30 minims.

Action.—Alterative, laxative, febrifuge and tonic.

Uses.—The leaves are viscid and have a sour and bitter taste. They are used in baths and fomentations, and bruised leaves as poultice in gout and rheumatism. In Punjaub they are applied as poultice to snake-bites and their juice is given internally. Powdered leaves applied over a wound are said to heal it without leaving a white scar. It is applied in burns and scalds also.

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296. DOLICHOS BIFLORUS.

(*N. O.*—LEGUMINOSAE.)

Sans.—Khalakula; Kulastha; Kulatha. *Eng.*—Horse-gram plant. *Hind.*—Koolthee. *Ben.*—Kulti. *Tel.*—Ulavalu, *Tam.*—Kollu. *Can.*—Huruli. *Mal.*—Kullu; Mutira. *Kon.*—Kulithu. *Mah.*—Hulage. *Fr.*—Dolic-a-deux fleurs.

Habitat.—A common twining plant growing all over India.

Parts Used.—The seeds.

Constituents.—Of the grain with husk.—Albuminoids, starch, oil, fibre, ash and phosphoric acid.

Action.—Astringent, diuretic and tonic.

Preparations.—Decoction of the grain (1 in 10), dose.—$\frac{1}{2}$ to 1 ounce; Powder.

Uses.—For scrofula, the *decoction of the grain* with pepper powder added is given and for diarrhoea one tola of the expressed juice of the fresh plant and ¼ tola of catechu mixed together is given thrice daily. A decoction made of ¼ seer of the pulse and five pieces of cachew-nuts is said to be very useful in cases of haemorrhage from the bowels etc. The pulse is a demulcent in calculus affections, coughs, etc. For this a decoction of the pulse with 30 grains of *Saindhava* added is used. Its decoction is also employed to reduce corpulence. A *powder* of these seeds is applied to the skin to check cold sweats. A decoction of this grain is given to females during parturition to promote discharge of the lochia. It is also used in leucorrhoea and menstrual derangements. With asafoetida, ginger powder and *bidalone* added the decoction is given in colic.

297. **Dolichos Bulbosus** (*Sans.* & *Ben.*—Sankhalu. *Hind.*—Chana. *Ben.*—Cola. *Fr.*—Dolic bulbuex. *Ger.*—Knollenbohne.) of the same species found in tropical India distinguished by nodular roundish beans which are eaten raw and cooked.

298. **Dolichos Catiang** (*Sans.*—Rajamasha *Hind*—Lobiya; Raish; Lota. *Ben.*—Barbati. *Mah.*—Chowlai. *Assam.*—Urohi-mahor-pat. *Tam.*—Caramunny-pyre. *Tel.*—Boberlu; alu-sundi; duntu-pesulu. *Can.*—Ala-sandi; Tadagunny. *Eng.*—Cow gram.) is cultivated in the tropical zone; it is considered hot and dry, diuretic and difficult of digestion.

299. **Dolichos Catjang** (*Fr.*—Dolic catjang) is a species found in Malabar where the pods and seeds which

have an agreeable taste and are rich in fats are used as tonic foods.

300. Dolichos Cylindricus or D. Sinensis (*Sans.*—Nispava; Rajamasa. *Ben.*—Baravati. *Hind.*—Lovia.) is a species with long pods which when tender are eaten as vegetables and otherwise the ripe dried beans are as pulses.

301. Dolichos Fabæformis (*Fr.*—Dolic en form de fevis) is a species found in Southern India having the same properties as D. Catjang.

302. Dolichos Lablab (*Sans.*—Simbi. *Hind.—Urdu & Ben.*—Sim. *Mah.*—Wal papri. *Guz.*—Avri. *Eng.*—Flat bean; Goabean. *Tel. Can. & Kon.*—Alsande. *Fr.*—Chevaux defrise bean.) is used as a vegetable. It is useful in phlegmatic disorders. Its seeds are said to be aphrodisiac and stopping nose bleeding.

303. Dolichos Lignosus (*Fr.*—Dolic ligneux) is a species found in Western India, the tender leaves and pods of which are eaten as vegetables. The constituents of the grain with husk are:—Albuminoids 20.5 p.c., Starch 53.5 p. c., Oil 2.2 p. c., Fibre 5.8 p.c. and Ash 3.7 p. c.

304 Dolichos Minimus (*Fr.*—Dolic tres petit) is a species found in Central India, the seeds of which are poisonous.

Dolichos Pruriens.—See Mucuna Pruriens.

Dolichos Sesban—See Sesbania Aegyptica.

305. Dolichos Soja.—(*Eng.*—Soya bean. *Ger.*—Soja bohne. *Ben.*—Gari kulaj. *Hind.*—Bhatwan. *Kumaon.*—Bhut) is a species cultivated in some part

of India for its seeds which are eaten and which contain a high percentage of protein and fat.

306. Dolichos Tranquebaricus is a species found in North India where its fruit is used as food.

307. Dolichos Trilobatus is a species found in Bengal where its tender leaves are used as vegetables and as a laxative.

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308. DROSERA PELTATA.
D. Lunata; D. Rotundifolia.

(*N.O.*—DROSERACEAE).

Hind.—Muka-jali. *Punj.*—Chitra. *Eng.*—Round leaf sundew. *Fr.*—Rossolis-en-bouclier.

Habitat.—Growing in grass throughout India.

Parts Used.—The leaves.

Action and Uses.—All the members of this Genus have a bitter, acrid and caustic flavor and their leaves have the curious property of being insectivorous. These hairy leaves bruised singly or combined with salt are used as a blister in Kumaon. If placed in milk they rapidly curdle it. But a cold infusion of this plant does not so act. Vaidyans use the plant for reducing gold to powder. They enclose the gold coin in the paste made of the plant and expose it to *puta* or burn it thoroughly. After cooling the gold is found reduced to powder. The powder of gold is given in grain doses as antiseptic and tonic.

Dryobalanops Aromatica; D. Camphor (Borneo camphor)—See Camphora Officinarum.

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309. ECHINOPS ECHINATUS.

(*N.O.*—COMPOSITAE).

Sans.—Utakantaka; Brahmadandi: Ajadandi. *Hind.*—Utakatara. *Eng.*—Camel's thistle (because camels consume it readily). *Guz.*—Utakanto; Motobor.

Habitat.—Himalaya, Central India, Concan, Deccan and Marwar.

Parts Used.—The plant, its root and the root-bark.

Action.—Aromatic bitter nervine tonic, alterative, diuretic and aphrodisiac.

Preparations.—Decoction and infusion of the root-bark (1 in 10) dose.—½ to 2 ounces. Expressed juice of leaves, dose—30 to 60 minims. Confection and Powder of the root-bark.

Uses.—Its root is used in the hoarse coughs of children. It is removed on Saturday or Sunday without touching it with knife and tied round the neck of children suffering from cough. It forms a chief ingredient in various alterative and tonic decoctions. The infusion is given in seminal debility, impotence, hysteria etc. The root-bark dried in shade, pounded and strained is given in doses of 1 to 1½ drs. The decoction as an alterative is given in dyspepsia, scrofula, syphilis and fevers. The following confection is recommended in seminal weakness:—Take of *Utakantaka* 5, poppy seeds 5, *Gokhru* (Tribulus Terrestris) 6, *Sambaraphula* (Stag's horn in powder or paste) 4, Cowhage seeds 4, *Kaakashira* (mucilage of the seeds of Sisymbrium Irio) 5, *Khorasani ajvan* (Henbane seeds) 5, *Musali Kanda* (root or tuber of Curculigo Orchioides) 4 and sugar 10 parts,

Mix and make a confection. Dose :—¼ to ½ tola twice daily.

Echites Antidysenterica.—See Holarrhena Antidysenterica.

310. Echites Dichotoma (*Sans.*—Bhadravalli; Bhadramunja; Visalyakrit; Asanamallika; Asphota. *Ben.*—Haparmali. *Hind.*—Ramsar; Chamarikavel. *Kumaon.*—Dudhi. *Tel.*—Arbimalletigo) is a climbing plant belonging to Apocynaceae Order and found growing all over India from the Ganges on the Himalayan tract, eastward to Bengal and in Central and Southern India. The milky juice of it is employed as an application to old sores and wounds in the U. P. "It is a mild irritant; it excites in them some degree of inflammation and thereby expedites the process of healing"—(Gupta).

Echites Frutescens.—See Ichnocarpus Frutescens.

Echites Spinosa—See Capparis Corundas.

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311. ECLIPTA ERECTA; E. Alba; E. Prostata.

(*N.O.*—Compositae.)

Sans.—Bhringaraj, Kesharaj, Superna. *Hind.*—Bungrah Mochrand. *Duk. Mah. & Guz.*—Bhangra: Markava. *Ben.*—Kesooria. Kesuti. *Tel.*—Guntagalijaeru; Galagarachettu. *Tam.*—Kaikeshi; Karishalanguni. *Can.*—Kadige garage; Ajagara: Garunga. *Mal.*—Cajenneam; Kanni. *Kon.*—Mako; Kajalamavu. *unj.*- Maka; Dodhak; Babri. *Arab.*—Radim-el-bint.

Habitat.—This herb is found abundantly throughout India in wet places and plentiful on the Himalaya. E.

Prostrata *(Nila Bhringa)* is found in Bengal and U.P. It is of 3 kinds.—Yellow, White and Black. The yellow is Wedelia Calendulacea; this herb has yellow flowers. The black *Bhungra* is a variety of the white one; when in flowers it is called white; when in fruit it is called *Kala bhungra.*

Parts Used.—The herb.—the root and leaves.

Constituents.—A large amount of resin and an alkaloidal principle *ecliptine.* The resin does not yield the re-actions of podophyllin

Action.—Cholagogue like taraxacum. The root is tonic and alterative; also emetic & purgative. The juice of the leaves is hepatic tonic, and deobstruent.

Uses.—The *root* is used as an application in the form of powder in hepatic and splenic enlargements and in various chronic skin diseases. Mixed with salt the root is given to relieve scalding of the urine in doses of 180 grains. As anodyne and absorbent it relieves headache, when applied with a little oil. The *leaf juice* of the yellow variety is used as a snuff in cephalalgia. In combination with aromatics such as *ajavan* seeds it is used in liver diseases; in catarrhal jaundice fresh leaves ground with a few pepper corns and made into a bolus of the size of a lime and administered early in the morning in sour curds or butter milk is found to cure the disease in 5 or 6 days. *Pills* made of the same ingredients in proportions of 3 parts of Eclipta to 1 of blackpepper, and given one morning and evening are said to cure syphilis. Butter-milk or water mixed with 1½ drachms of expressed leaf-juice of Eclipta is said to be

a remedy for serpent-bites. Two drops of the expressed juice given with 8 drops of honey is a popular remedy for new born children suffering from catarrh; with castor oil it is given in worm troubles. It is dropped into the ears in earache. The *fresh plant* mixed with sesamum oil is applied externally in elephantiasis. The *juice of the leaves* of yellow flowered variety is administered in tea-spoonful doses in jaundice and fevers. A *decoction* of the leaves is used in uterine haemorrhages; it is administered in 2 to 4 ounce-doses twice a day. The *leaves* bruised into a paste form an excellent remedy for scorpion stings; it it rubbed on the painful and inflamed part around the bite and then tightly applied like a poultice to the wound itself; by so doing they are said to draw forth all the poison from the wound. It is similarly applied to chronic glandular swellings and skin diseases. A *vapour bath* or fumigation of Eclipta leaves applied to piles, is said to cure them. The juice of the leaves mixed with gingelly or cocoanut oil and boiled together makes excellent preparation for annointing the head and is said to render the hair black and luxuriant. The following are three useful Ayurvedic preparations :—(1) *Bhringaraj Tailya*:—(1) Take of *Bhringaraj* juice 16 parts, *Mundara* (Calotropis gigentia), *Triphala*, (three myrobalans) and *Shyamalata* (Ichnocarpus frutescens) each 1 part. Mix and add sweet oil 4 parts and boil. Useful in pityriasis, alopecia etc., and as a depilatory. (2) Take of sweet oil 4 seers, *Bhringaraj* juice 16 seers, iron rust, the three myrobalans and the root of Ichnocarpus frutescens reduced to a paste, in all 1 seer and prepare an oil in the usual way. It removes scurf from the

head, turns grey hairs black and cures alopecia. (3) Take of *Bhringaraj* juice ½ seer, Iron powder 2 tolas, Alum 2 tolas and sweet oil ¼ seer. Mix and boil till all the water is evaporated and only oily part remains. Then sift the oil and keep it well corked after adding to it ½ tola of cinnamon oil. This medicated oil applied daily will restore the colour of premature grey hair. The following prescription is recommended for Tetanus:—Take of the juice of Eclipta Erecta 1 tola, juice of *Tumba* (Leucas Cephalotes) ¼ tola, Ginger Juice 2 tolas, juice of Vitis Trifolia 1 tola, Leaf juice of Sesbania grandiflora 3 tolas. All these to be boiled with four times the cocoanut juice and a little rice and treacle to form a *Khir*. This is given twice a day.

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312. ELAEODENDRON GLAUCUM; E. Roxburghii; E. Paniculatum.

(*N.O.*—CELASTRINEAE.)

Sans.—Bhutphal. *Punj.*—Mirandu; Bakra. *U. P. & Oudh.*—Chauri. *Hind.*—Bakra Jamrasi. *Tam.*—Cheluppaimaram. *Tel.*—Nerija; Booligi (the leaves). *Mah.*—Bhutapala. *Bom.*—Tamruj; Arantandigbhukas. *Concan.*—Burkas. *Cing.*—Naralu; Perunpiyari.

Habitat.—Throughout the hotter parts of India.

Parts Used.—The leaves, root and bark.

Constituents.—The bark contains an alkaloid, 2 resins, tannin 8 p.c. glucose 5 p.c. and ash 18 p.c. The ash contains calcium carbonate and calcium oxalate. The alkaloid is separated by lime and chloroform. It gives a purplish colour with sulphuric acid and yellow with nitric acid. With acids it forms salts soluble in water. One of

the resins is soluble in ether and amylic alcohol and the other in rectified spirit.

Action and Uses.—The *powderd leaves* have a powerful sternutatory action and are used as a *fumigatory* to rouse women from hysterical syncope and as a *snuff* to relieve ordinary headache. The fresh *root-bark* when rubbed into a *paste* with water is a favourite application to swellings. It is a strong astringent. The *root* is believed to be a specific against snake-bite and the *bark* is said to be a virulent poison. It is said also that the leaves are used to remove the *Bhut* or demon of which women are supposed to become possessed in hysteria. But there are no grounds for these beliefs.

313. ELEPHANTOPUS SCABER.

(*N.O.*—Compositae.)

Sans.—Gojihiva. *Eng.*—Prickly leaved elephants' foot. *Hind.*—Gobhi. *Ben.*—Gojialata; Shamdulum. *Mah.*—Gojibha. *Tam.*—Anashavadi. *Tel.*—Hustikasaka. *Can.*—Hakkarike. *Fr.*—Pied d'elephant.

Habitat.—Throughout india in shady places, especially in Bengal and East Indies.

Parts Used.—The root and leaves.

Preparations.—Decoction of the leaves and root (1 in 10), dose—$\frac{1}{2}$ to 2 fluid ounces.

Action and Uses.—The plant is mucilaginous, astringent, alterative and febrifuge. The decoction of the root and leaves with cumin and buttermilk is given in dysuria and other urethral discharges or complaints; also in diarrhoea and dysentery.

314. ELETTARIA CARDAMOMUM; E. Repens.

(*N.O.*—SCITAMINEAE).

Sans.—Ela ; Truti ; Kapita ; Varni ; Karangi ; *Eng.*—Lesser Cardamom. *Hind*—Chhoti Elachi. *Ben.*—Garate ; Ghota Elaichi. *Guz.*—Elachi. *Tel.*—Elakaya. *Tam.*—Elakaya. *Mah.*—Valdode; Elachi. *Can.*—Elakki. *Burm.*—Palah; Bala. *Malay.*—Raputage pinvar. *Gr.*—Cardamom Elettaric.

Habitat:—Cultivated for its fruit in many parts of Southern India and Ceylon.

Parts Used:—The dried ripe seeds.

Constituents:—Fixed oil, volatile oil—the active principle 5 p.c., potassium salts, starch, nitrogenous mucilage, yellow coloring matter, ligneous fibre and ash containing manganese.

Action:—Powerful aromatic, stimulant, carminative and diuretic. These properties are due to the essential oil contained in the seeds.

Uses:—The cardamom seeds are generally used as a masticatory. They are valuable in many stomach complaints. A decoction of cardamoms together with their pericarp and jaggery added is a popular home remedy to relieve giddiness caused by biliousness. A compound powder containing equal parts of cardamom seeds, ginger, cloves and caraway (*jeera*) is a good stomachic in ½ drachm doses in atonic dyspepsia. A *powder* made of equal parts of parched cardamom seeds, aniseeds, and caraway seeds given in 1 teaspoonful doses is a good digestive. A powder made of the cardamom seeds 5 parts, resin of Shorea Robusta (*rala*) 2 parts, *Motha* (Cyperus rotundus) 4, Red sandal 2, Long pepper 3, Cloves 2, and *Nagkesara*

1 part is useful to check vomiting; dose:—10 to 20 grains. A compound powder called *Eladi Churnam* composed of Cardamoms 1 part, the bark of Cinnamom 2 parts, the flowers of Mesua ferrea 3 parts, black pepper 4 parts, fried borax 5 parts, long pepper 6 parts and sugar equal to their united measure *i.e.*, 21 parts is said to be a good nutritive tonic and demulcent useful in bronchial affections, given in doses of 5 to 20 grains three times a day.

Elettaria Major.—See Amomum Subulatum.

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315. ELEUSINE CORACANA: E. Aegyptica.

(*N.O.*—GRAMINACEAE.)

Sans:—Soma; Rajika; Krishna. *Eng.—Hind. Can* & *Mal.*—Ragi. *Cing*,—Kurakhan. *Tel.*—Ragulu; Tamidalu. *Ben.*—Murooa. *Mah.*—Nachni. *Sind.*—Nagli. *Tam.*—Iragi. *Kon.*—Nanchano. *Hind.* & *Pers.*—Mandua; Makra; Rotka *Punj.*—Chalodra. *Guz.*—Navto.

Habitat:—This grain is grown almost in all parts of India.

Parts Used:—The seeds.

Constituents:—Albuminoids, starch, oil, fibre and ash; Phosphoric acid, 0·4 p. c.

Action & Uses:—This grain is rather difficult of digestion and unpalatable, but highly nourishing; it is most suitable to hard-working classes. Cakes made from it are very dry eating and thus it is considered to be an economic grain. It forms a principal diet given to prisoners in some of the Indian jails. The allied species E. Aegyptica named *Makra* occurring in Upper India is

reputed as an alleviator of pains in the region of the kidney. It is given in the form of *decoction* of the seeds and its herbaceous parts are applied externally for the cure of ulcers.

316. Embelia Basaal is a species of climbing Myresinaceous Genus, found in Malabar, the seed of which is used as a vermifuge, the bark of the root in toothache and a decoction of the leaves as a gargle in sore-throat and in making a soothing ointment.

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317. EMBELIA RIBES;
E. Indica; E. Glandulifera; & E. Robusta.
(*N.O.*—MYRESINEAE.)

Sans.—Vidanga; Vrishanasana; Chitra-tandula. *Hind.*—Baberang. *Ben.*—Biranga. *Guz.* & *Hind.*—Karkannie. *Tel.* & *Tam.*—Vayu; Vilamgan. *Mah.*—Vavadinga. *Bom.*—Amti. Ambat; Vaivarang. *Can.*—Vayubaliga. *Nepal.*—Himalcheri. *Cing.*—Umbelia. *Arab* & *Pers.*—Birangi-i-Kabuli.

Habitat:—These climbers are found in the hilly parts of India from the Central and Lower Himalaya down to Ceylon and Singapore.

Parts Used:—The berries, the leaves and root-bark.

Constituents:—Embelic acid, a volatile and fixed oil, colouring matter, tannin, a resinoid body and an alkaloid called *Christembine*. Crystalline compounds of embelic acid with soda, potash, and ammonia are obtained.

Action.—The fruits or dried berries are carminative, anthelmintic, stimulant and alterative. The pulp is purgative. The fresh juice is cooling, diuretic and laxative.

Preparations.—Decoction (1 in 10), dose :—½ to 1 ounce; Liquid Extract, dose :—1 to 4 drachms; Powder, dose :—1 to 4 drachms; Paste; Confection; Ammonium embelate (a salt), dose :—3 to 6 grains.

Uses.—The dried berries are useful as *powder*, preferably of E. Robusta to expel intestinal worms especially tape-worms. For a child a drachm of the powder mixed with a few drops of pure honey twice in the day is the dose. The *Ammonium embelate* in doses of 3 grains is also effective; it is given with a little honey or syrup, preceded and followed by a dose of castor oil. The powder may be given also with an *infusion* of the seeds. The worm is expelled dead. The drug is said to be a substitute for male fern, better than male-fern as it is not so griping as male-fern. The berries are also supposed to prevent flatulence and useful in dyspepsia; a few berries or their powder is put into the milk given to children. The *fruit* of E. Robusta is given internally for piles. A *paste of the seed* is used locally in ringworm and other skin diseases. The *young leaves* of the plant combined with ginger are used as a gargle in sorethroat, aphthae and indolent ulcers of the mouth. The dried bark of the root is a reputed remedy for toothache. A paste of the bark is a valuable application to the chest in lung diseases like pneumonia etc; in such cases rice-conjee in which this bark is boiled is given internally. The berries crushed and mixed with butter is an ointment applied to the forehead in headaches. This drug enters into the composition of several applications for ringworm and other skin diseases, for example:—Take of *Baberang*, rock

salt, chebulic myrobalan, *vakuchi* (Vernonia anthelmintica) mustard, turmuric and the seeds of Pongamia glabra (*Karanja*) equal parts and make them into a thin paste with cow's urine.—(Chakradatta). *Vidanga Taila* composed of embelia ribes, Croton tiglium and and Carbonate of sodium is applied to the forehead or dropped into the nose for relieving headache or hemicrania.

318. **Emblica Tsjerium-cottom** is another species found in Malabar, the bark of which is used in aphthæ and in indolent ulcers of the mouth and the gums.

319. EMBLICA OFFICINALIS.

(*N.O.*—EUPHORBIACEAE)

Sans.—Dhatri; Amraphalam; Amalakam; Sriphalam. *Eng.*—Emblic Myrobalan; Indian gooseberry. *Ger.*—Gebrauchlicher Amlabaum. *Fr.*—Phyllanthe Emblic. *Hind.*—Aunla: Amlika; Anvurah. *Ben.*—Amlak; Amla. *Mah.*—Avala, (seed) Avalkati. *Tel.*—Nelli; Usarikayi; Amalakamu. *Tam.*—Toppi. *Mal.* & *Can.*—Nellikay. *Cing.*—Nelli; Nellika. *Burm.*—Ziphiyu-si; Shabju. *Punj.*—Ambli Ambul. *Guz.*—Ambala. *Cash.*—Aonla. *Arab.*—Amlaj. *Pers.*—Amala.

Habitat.—The Deccan, the sea-coast districts and Cashmere.

Parts Used.—The dried fruit, the nut or seed, leaves, root, bark and flowers.

Constituents.—Gallic acid, tannic acid, gum, sugar, albumen, cellulose and mineral matter.

Action.—Fresh fruit is refrigerant, diuretic and laxative. The dried fruit is astringent. The flowers are cooling and aperient. The bark is astringent.

Preparations.—Decoction and Infusion of leaves and seeds; a liquor, a fixed and an essential oil; confection; powder; paste and pickles. An astringent extract equal to catechu is prepared from the root by decoction and evaporation.

Uses.—The *fresh fruit* is used in Turkeystan in inflammations of the lungs and of the eyes as a collyrium. In Persia it is used as a vermifuge; the *juice* of the fruit is used; it is generally given with honey; the dose is from 1 to 3 drachms. The fruits are made into pickles to stimulate appetite. A *paste* of the fruit alone or with *nilotphala* (Nelumbium Speciosum), *Kesar* (Saffron) and rose water is a useful application over the pubic region in irritability of the bladder, in retention of urine and to the forehead in cephalalgia. An infusion of the seeds is given as a febrifuge and in diabetes; it is also used as a collyrium and applied with benefit to recent inflammations of the conjunctiva and other eye complaints. The juice or *extract* of the fruit with honey and *pipli* added is given to stop hiccup and in painful respiration. The *dried fruit* immersed in water in a new earthen vessel a whole night yields a *decoction* which is used as a collyrium in ophthalmia. It may be applied cold or warm. The dried fruit is useful in hæmorrhage, diarrhoea and dysentery; with iron it is a valuable remedy in anæmia, jaundice and dyspepsia. A fermented *liquor* prepared from the root is used in jaundice, dyspepsia, cough, etc. The *juice* of the fresh fruit and ghee mixed together is a good restorative tonic. A *sherbat* prepared from the fresh fruit with or without raisins and honey is a favourite, cooling drink which is said to have a diuretic

effect. A *decoction* made by boiling 4 drachms each of the powder of emblic and chebulic myrobalans and one drachm of rhubarb powder in a pint of water is a laxative as well as diuretic, given in 2 ounce-doses to sick people. The *juice of the bark* combined with honey and turmuric is a remedy for gonorrhoea. The *root bark* rubbed with honey is used in aphthous stomatitis. A decoction of the leaves is also useful as a mouth-wash in aphthae. A mixture of the fruit juice and sugar relieves burning in the vagina. The *leaves* are used as infusion with fenugreek seeds in chronic dysentery and as a bitter tonic. For loss of taste after fevers a *decoction of the emblic seed*, dried grapes and sugar is used for gargling. A decoction of the emblic seed, *Chitrak* root, chebulic myrobalan and *pipli* is given in fevers; so also a *compound powder* made of equal parts of the emblic seed, *chitrak* root, chebulic myrobalan, *pipli* and *saindhava* is used similarly. A powder of the emblic seed and red sandal is given with honey to stop nausea and vomiting. The *seed* fried in ghee and ground in *conjee* is applied as *Lep* to the forehead to stop bleeding from the nose. The seed burnt, powdered and mixed in oil is a useful application for scabies or itch. One tola of the seeds soaked in a tinned vessel during the night, and ground next morning, with cow's milk and taken in 7 tolas or ¼ seer of milk is a good remedy for biliousness. A powder made of the equal quantity of emblic seed and *asvagandha (*root of Withania Somnifera) given with ghee and honey is a restorative invigorator, especially in winter days. Half a drachm each of the emblic seed and *gokhru* powdered and mixed with 15 grains of essence of *Gulancha* and

given early morning in ghee and sugar is an equally nutrient tonic. For diarrhoea of children, a compound powder of the emblic seed, *Chitrak* root, chebulic myrobalan, *pipli* and *padelone* is given in suitable doses according to age, in warm water twice daily, morning and at bed time. The *milky juice* of the leaves is a good application to offensive sores. A *fixed oil* obtained from the berries strengthen and promote the growth of hair. The *essential oil* distilled from the leaves is largely employed in perfumery. The *tender shoots* given in buttermilk cure indigestion and diarrhoea; green fresh leaves combined with curds have also similar effect. The *flowers* combined with other articles are used in the form of an electuary. The fruit is preserved, or made into confection. It is prepared thus:—The berries are first soaked in water for 12 hours; strain and throw away the water; boil the berries in fresh water for a couple of hours so that they may become soft; then grind them into a paste and add three times their quantity of sugar and make into confection; it is given in doses of 1 to 2 drachms. It is a pleasant purgative, useful in habitual constipation; it is employed by Hakims with much benefit in palpitation of the heart and in various complaints connected with digestive organs, such as biliousness, anorexia or dyspepsia etc. Other preparations recommended in Ayurveda are:—*Dhatri Leha*:—Take of powdered emblic myrobalan 64 tolas, prepared iron 32 tolas, liquorice powder 16 tolas, mix them together and soak in the juice of *gulancha* for seven times, successively. This is given in doses of 20 to 40 grains in anaemia, jaundice and dyspepsia. *Dhatri Arista* or fermented liquor of emblic

myrobalans:—Take the fresh juice of two thousand emblic myrobalans, honey in quantity equal to one-eighth of the juice, powdered long pepper 16 tolas, sugar six seers and a quarter; mix them together, boil for a while and leave the mixture to ferment in an earthen jar. This liquor is used in jaundice, dyspepsia, indigestion, cough, etc. *Aksirul-ul-Imraz* recommends the following mixture for leucorrhoea:—Take of *Tukhm Amla* 5 parts and sugar-candy 2 parts. Mix and take for 14 days. An ointment made of the dried emblic myrobalans 4 parts, Camphor 1, Nux-vomica seed 4, Sulphur 4, Copper sulphate 1, Red oxide of mercury 2 parts and ghee, is a useful application in obstinate itch, prurigo etc. *Chyavanaprasa*, an Ayurvedic preparation so familiar among the people is composed of the following drugs:—Barks of Aegle marmelos, Premna serratifolia, Bignonia indica, Gmelina arborea, Bignonia suaveolens, the roots of Sida cordifolia, Hedysarum gangeticum, *Doodia* or Uraria lagopoides, Phaseolus trilobus, Glycine debilis, the piper longum, Tribulus languinosus, Solanum zanthocarpum, Rhus succedanea, Phyllanthus niruri, Grapes, Caelogyne ovalis, Aplotaxis auriculata, Aquilaria agallocha, Chebulic myrobalans, Tinospora cordifolia, *Riddhi* (not being obtainable, *Bala* or Sida cordifolia is used), *Jivak* (Not being obtainable, Tinospora cordifolia is used), *Rishabhaka* (*Bhumi kushmanda* or Bamboo Manna is used), Curcuma zerumbet, the tubers of Cyperus rotundus, Boerhavia diffusa, *Meda* (Withania somnifera; not being obtainable Cassia fistula is used), Elettaria cardamomum, Nymphae stellata, Red sandal wood, convolvulus paniculatus, the roots of Justicia

adhatoda, the root called *Kakoli*, & Leea hirta. Take one *pala* of each of these. Take also 500 fruits of Phyllanthus Emblica and tie them loosely in a piece of cloth. Boil all these together in 64 seers of water down to 16 seers and strain the decoction. Throw out the seeds of the myrobalans and taking the remnants of the fruits, fry them in 6 *palas* of ghee and 6 *palas* of sesamum oil mixed together. The fried product is then to be reduced to a paste on curry stone. After this boil the decoction and this paste, with 50 *palas* of sugar candy. When the boiled matter assumes some degree of consistency, throw into it bamboo manna 4 *palas*, the powder of Piper longum 2 *palas*, that of the bark of Cinnamomum zeylanicum 2 tolas, that of the leaves of Cinnamomum tamala 2 tolas, that of Cardamoms 2 tolas, and that of the flowers of Mesua ferrea 2 tolas, and stir the contents. When cooled, add 6 palas of ghee and keep the compound in a jar long in use for storing ghee. Dose.—½ to 2 tolas, vehicle being goat's milk. This is a nutritive tonic, useful in phthisis, and improves all conditions of debility.

320. **Enhydra Fluctuans** is a species belonging to Compositae (*Sans.*—Hilamochika. *Hind.*—Harhuch. *Ben.*—Hingcha. *Uriya.*—Hiramicha.) found in Eastern Bengal, Assam and Sylhet. The leaves are antibilious and laxative; useful in the torpidity of the liver. The *infusion* should be made the previous evening. It is boiled with rice and used with mustard oil and salt. Dose is 1 drachm. The *leaves* are also pounded and made into a paste which is applied cold over the head as a cooling agent. The leaves are also useful in diseases of the skin and the nervous system. Their expressed *juice* is used as

demulcent in gonorrhoea. It is taken mixed with milk either of cow or goat. The fresh juice of the leaves in doses of about a tola is prescribed as an adjunct to tonic metallic medicines given in neuralgia and other nervous diseases.

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321. ENTADA SCADENS; E. Pusaetha, or Acacia Scadens.

(*N.O.*—LEGUMINOSAE).

Sans.—Gilla. *Bom.* and *Duk.*—Gardul ; Pilpita. *Guz.*—Suvali-amli. *Nepal. & Sikkim.*—Pangra. *Uriya.*—Geredi. *Mah.*—Girambi. *Ben.*—Gila-gach. *Arab.*—Samgh-i-Arabi. *Tel.*—Gilatiga. *Hind.*—Garabi. *Mal.*—Parin-kakavalli. *Bom.*—Pitpapra (the seeds.).

Habitat.—Tropics: Eastern Himalaya, East Bengal.

Parts Used—Seeds.

Constituents.—Seeds contain a viscid turbid oil 7 p. c. and a little saponin.

Action.—The seeds are irritant and emetic.

Uses.—A paste of the seeds is applied to relieve inflammatory glandular swellings in the axilla known as *Khaka Bilari*. It is applied in pains of the loins and joints and to swollen hands and feet in cases of general debility with marked relief. The seeds are used as soap to wash the hair.

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322. EPHEDRA VULGARIS & E. Pachyclada.

(*N.O.*—GNETACEAE.)

Bom. & Pers.—Huma. *Japan.*—Ma-oh. *Punj.*—Butshur; Chewa Amsama. *Sutlej.*—Phok.

Habitat:—Western Himalaya, Afghanistan etc.

Parts Used:—Root and dried branch.

Constituents:—Ephidrine, an alkaloid obtained from the stem. By oxidation it splits up into benzoic acid, monomethylamine and oxalic acid. Isoephidrine is obtained by heating ephedrine.

Preparations:—Decoction of the root (1 in 40), dose—½ to 1 oz.

Action & Uses:—Alterative, diuretic, stomachic and tonic. Ephedrine like atropine has the property of dilating the pupil of the eye. *Juice* of the berries is useful in affections of the respiratory passage. The *decoction* is alterative and used for acute muscular and articular rheumatism and in syphilis. It is given in cases where antipyrine, salol, antifebrine and salicylate of soda have failed. As a stomachic it improves digestion and gives tone to intestines. The plant is regarded the same as the Soma of the Vedas.

Epilobrium Fruticosum—See Jussiæa Suffruticosa.

323. Erigeron Asteroides (*Hind. & Guz.*—Maredi. *Mah.*—Sonsali) is used in India as a stimulating diuretic in febrile affections. It is an annual, flowering during the cold season and a native of dry cultivated lands.

324. ERIGERON CANADENSE; E. Viscosum.

(*N.O.*—Compositae.)

Eng.—Canada Fleabane; Squaw Weed. (*Eri*,—early and geron—hoary, aged old man alluding to the early aged appearance of the plant before spring. Fleabane is in allusion to the supposed property of the plant to destroy fleas). Large bundles of this plant soaked in milk are suspended in the

rooms to allure flies to their destruction. Squaw weed is termed from the weed having a special action upon the uterus.

Habitat.—Common in all warm countries—Western Himalaya, Punjab, Kashmir.

Parts Used.—The volatile oil distilled from fresh flowering herb (oil of Fleabane.)

Constituents.—A volatile oil, bitter extractive principle and tannin. (Oleum Erigerontis is obtained by distillation. The oil is a pale yellow liquid becoming darker and thicker by age of a peculiar aroma and persistent terebinthinate odour of neutral re-action readily soluble in alcohol).

Action & Uses.—The drug owes its virtues to the volatile oil. It acts like turpentine, but is less irritating and less efficient. It has a special action as a hæmostatic on the uterus and the intestines and is of special value in uterine haemorrhage, menorrhagia, intestinal haemorrhage of passive form and typhoid fever. It is also given in cystitis, calculus etc., and in bronchial catarrh and haemoptysis without fever. Dose of the oil is from 5 to 10 minims. It has the effect of checking the waste of albumen.

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325. ERIODENDRON ANERACTUOSUM or Bombax Pentandrum.

(*N.O.*—BOMBACEAE.)

Sans.—Svetashalmali. *Eng.*—Capok tree; White silk cotton tree. *Hind.*—Safedsimul; Huttian. *Ben.*—Svetspimool. *Can.*—Biliburuga; Apoorani *Mal.*—Poola; Pamala. *Tam.*—Ilavam. *Tel.*—Burugasauna; *Duk.*—Safed khatyan. *Mah.* & *Kon.*—Safed Savara; Pandresavara. *Malay.*—Kopok. *Guz.*—Dolo shemalo.

Habitat.--This tree is a native of Malaya, met with in forests in the hotter parts of India, Ceylon etc.

Parts Used.—Gum, unripe fruits, seeds, flowers, roots and leaves.

Constituents.—The seeds contain about 23 p. c. of oil and yield about 17 p. c., by pressing. Capok seed oil resembles cotton seed oil in reaction, but not used so extensively for edible purposes as cotton seed oil. The air-dried Capok seeds contain 25.6 p. c. of fatty oil. It was found to consist principally of triglycerides of palmitic, oleic and linoleic acids. The gum which the tree yields contains tannic and gallic acids. It is a product of diseased action. Capok cake contains :—Water, nitrogenous (albuminous) compounds, fat, non-nitrogenous extractive matter, woody fibre and ash. The ash from Capok cake contains 28·5 p. c. of phosphoric acid and 24.6 p. c. of potash.

Action.—The gum or dried juice has tonic, alterative, astringent, aphrodisiac and laxative properties; the dried flowers are demulcent, the roots have stimulant and tonic effect and in large doses act as emetic. The unripe fruits are regarded as demulcent and astringent.

Uses.—The gum known as *Huttian gond* or *mocharas* is useful as a styptic; given with benefit in diarrhoea, dysentery and menorrhagia; ground to *powder* it is given in milk as a good tonic in impotence, and to children as a cooling laxative. In 20 to 30 grain doses with equal quantity of sugar the gum is useful in the diarrhœa of children. *Extract Eriodendron* is used with success in diabetes. The *dried flowers* are boiled with

poppy seeds, goat's milk and sugar and then inspissated and of this conserve two drachms are given three times a day in hæmorrhoids. The *young roots* dried in the shade and powdered form a chief ingredient in aphrodisiac medicines. The *tap-root* of the young plant is useful in gonorrhœa and dysentery. The *leaves* are ground into a *paste* and administered in gonorrhœa.

326. Eruca Sativa (*Eng.*—The Rocket. *Punj.*—Taramiri. *Bom.*—Safed Sarsu. *Arab.*—Jarjir. *Pers.*—Eihukan) is an annual or biannual herb of the Cruciferae Order, cultivated as a field crop in the U.P. & C.P. for the oil expressed from the seed. It is said by Mahomedans that if sour pomegranate is watered with its juice the fruit will become sweet. Its seeds contain oil, albuminoids, soluble carbo-hydrates, woody fibre, mineral matter and sand. It is acrid and used for purposes similar to those of mustard. The oil expressed from the seeds can probably be used as a substitute for rape or mustard oil.

Ervum Lens.—See Lens Esculantes.

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327. ERYTHRINA INDICA; E. Stricta; E. Corallodendron.

(*N.O.*—LEGUMINOSAE).

Sans.—Mimbataru; Mandalia; Paribhadra; Parijataka. *Eng.*—Indian Coral tree; Moochy wood tree. *Fr.*—Arbre immortel. *Ger.*—Indischer korallenbaum. *Hind.*—Ferrud; Mandâr; Pângrâ. *Ben.*—Palita-madâr; Palidhâr. *Tel.*—Barijamu; Machhikara; Modugo; Baridachettu; Badchipachettu. *Tam.*—Kaliyana marukka. *Can.*—Harawana; Warjippe; Hongara; Pongara. *Mal.*—Mooloo-mogrikah. *Guz.*—Pânarawas; Pârâroo. *Kon.*—Pangiro. *Mah.*—Pangâra; Pânara, Paringa.

Habitat.—This tree is common in Bengal and many parts of India often grown in gardens as a support for black-pepper vines. E. Stricta is the species found in Malabar and used like E. Indica.

Parts Used.—The bark, juice and leaves.

Constituents.—The bark contains two resins and a bitter poisonous alkaloid *erytherine* which exists in the leaves also.

Action.—The bark is antibilious, expectorant, and febrifuge; also anthelmintic. It is said to reduce "*vayu*" and "*Kafa*". The drug is found to act on the central nervous system so as to diminish or abolish its funtions. The leaves are diuretic, laxative, emmenagogue, and galactagogue. *Erytherine* is in action antagonistic to strychnine and may be used as an antidote to strychnine poisoning.

Preparations:—Infusion of leaves (1 in 10), dose.—2 to 8 drs; Powder and Decoction of bark (1 in 20), dose—2 to 4 drs.

Uses:—The *bark* is used in decoction in dysentery, in worms and useful as a collyrium in ophthalmia. The inner side of the bark is smeared with ghee and held over the flame; the *soot* thus deposited is used in watery eye, tinea-tarse, and purulent conjunctivitis, being applied to the inner side and edges of the lower lid. The *juice of the leaves* mixed with castor oil is given for the cure of dysentery. The *fresh juice* of the leaves with a few drops of honey added, taken in two ounce doses is a good vermifuge, whether for round, tape or thread worms; it acts as cathartic; it is also used as an injection into the ear for the relief of ear-ache

and as an anodyne for toothache. *Crushed leaves* are applied hot to rheumatic joints to relieve pain; and as *poultice* they are applied hot and bandaged upon venereal buboes, the bandage being changed twice daily. The *juice of the bark, and young leaves* is used to kill worms in sores. The juice is given for syphilis. The *young-roots* of the white flowered variety are pounded and given with cold milk as an aphrodisiac. Cooked with cocoanut milk the *fresh leaves* are used internally and externally as galactagogue and emmenagogue; the *leaf juice* is said to have cured long-standing dysmenorrhoea, and also removed sterility in fatty women by gradually reducing fat and producing natural menstrual flow, the medicine being continued for two to three months. The juice increases the secretion of milk if taken during the period of lactation. The juice in doses of 3 to 4 drachms morning and evening is given to relieve painful and difficult micturition. A *decoction* made of these leaves and of the leaves of Emblica Officinalis one tola each in sixteen ounces of water boiled down to four ounces is a good cathartic useful in chronic dyspepsia with constipation. A *decoction of the root-bark* (2 tolas in sixteen ounces of water boiled down to four ounces) together with a dose of *Vasanta Kusumaker Rasa* daily every morning in cases of diabetes is said to reduce the quantity of urine and sugar within a short time.

Erythrina Monosperma.—See **Butea Frondosa.**

328. ERYTHROXYLON COCA.

The Coca plant.

(*N. O.*—ERYTHROXYLACEAE.)

Habitat.—This South American shrub is now being cultivated in the tea districts of India and Ceylon.

Parts Used.—Leaves and their alkaloid Cocaine.

Constituents.—The leaves contain an alkaloid *Cocaine*, along with other substances.

Action.—The leaves are stimulant, carminative, sialagogue, expectorant, aphrodisiac and emmenagogue. The alkaloid cocaine is locally anaesthetic; it produces mydriasis. It and its salts are nerve stimulant and restorative. It is an antidote to alcohol, opium and tobacco habits. It is a great digestive tonic.

Uses.—The *leaves* are chewed by S. American Indians as they have great sustaining power. Coca leaves if chewed strengthen and preserve the teeth. As digestive they are chewed after heavy meals. For infants suffering from colic, warm milk in which the leaves are stirred is given. In throat affections such as catarrh, cold asthma etc., the leaves are chewed or smoked as cigarettes, or used in hot decoction. *Cocaine* is injected hypodermically and painted externally to produce local anaesthesia. It is used in minor operations especially in ophthalmic surgery. The anaesthetic effect commences in about 3 minutes and lasts for about half an hour.

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329. EUCALYPTUS GLOBULUS.

(*N.O.*—MYRTACEAE.)

Eng.—The Australian Fever tree or Blue gum tree. Iron Bark, Wooly Butt.

Habitat.—A native of Australia, now being cultivated on the highlands of India, chiefly on the Nilgiris.

Parts Used.—The dried leaves, gum (Eucalyptus kino), exudation from the stem, and oil distilled from the fresh leaves.

Constituents.—The leaves contain volatile oil 6 p. c. tannin, Cerylic alcohol, a crystallizable fatty acid and a resin composed of three resinous bodies. The gum contains kino-tannic acid, catechin and pyrocatechin. The oil contains cineol (Eucalyptol), d-pinene, eudesmol, butyric and valerianic aldehydes and phellandrine.

Action.—The leaves are febrifuge, stimulant, expectorant, diaphoretic and antiseptic. Anti-malarial properties are due to the volatile oil. Eucalyptus increases the flow of saliva, gastric and intestinal juices and thus increases appetite and digestion. It increases the heart-beats, lowers the arterial tension and quickens respiration ; it is eliminated by the skin, kidneys, bronchi, thus found in perspiration, urine, breath, milk etc. In large doses it is an irritant of the alimentary canal, producing eructation, indigestion, nausea, vomiting and purging. In toxic doses it is a narcotic poison. It paralyses the respiratory centre in the medulla.

Preparations.—Ointment with iodoform, paraffin and vaseline; Oil; Tincture ; Decoction and Infusion of leaves (1 in 5) ; Lozenge made of red gum with Fruit Basis ; Emulsion with powdered gum and water for urethral injection, or lotion ; vapour with carbonate of magnesia (40 minims to one ounce); Eucalyptus gauze, Eucalyptus wool and Eucalytus saw dust as deodorants ; Dilute Essence or Fluid Extract of the leaves.

Uses.—Eucalyptus is used in the treatment of catarrhal states of the broncho-pulmonary mucous membrane, intermittent and septic fevers, croup, diphtheria, whooping cough, purulent catarrhal affections of the genito-urinary organs, and for surgical wounds, ulcers etc. Leaves when chewed perfume the breath and harden spongy and bleeding gum.

Respiratory Affections.—In bronchitis where the cough is almost constant with a free watery and frothy expectoration, in subacute and chronic cases, especially when there is a tendency to spasm, and in coryza or nasal catarrh where there is a profuse offensive catarrhal dis charge, *inhalations* of the hot infusion of leaves remove the foetor and check the secretions ; the *infusion* is also given *internally* in half to one ounce doses and in aphthous uloerations in the mouth and throat of children, in tea-spoonful doses ; in acute affections or recent inflammation it is not so well adapted as to chronic cases with free muco-purulent expectoration-*Eucalyptol* (the oil distilled from the fresh leaves) is used as dry inhalant. In whooping cough a mixture containing 10 drops of the tincture of Eucalyptus, and a drachm each of glycerine and syrup in an ounce of pure water, may be given in doses of two drachms. For infants of 2 to 4 years of age the dose of the tincture is 3 to 5 drops in sweetened water every three hours. Inhalation of the tincture is also recommended The mixture is useful in asthmatic cases. The tincture is administered with benefit in croup and ozœna, and in cases of pulmonary gangrene with foetid breath, cough, dyspnoea and fever and black offensive sputa.

Diphtheria.—Disinfection of the air of the patients' room by means of the steam produced by pouring boiling water on eucalyptus leaves, has proved a simple and successful method of treating this fatal disease, in the hands of Dr. J. M. Gibbes (New Zealand) who claims to have treated a large number of cases without any stimulants or medicine except castor oil.

Fevers.—In the treatment of intermittents especially chronic and obstinate cases in which quinine has failed Eucalyptus is found useful ; it is considered of great value, in the convalescence from fevers. In Australia it is a popular remedy for fevers. The reason of its being free from malaria is attributed to the abundance of Eucalyptus trees in that country. In Europe it is used in the treatment of diseases prevalent in marshy districts.

In *purulent catarrhal affections* of the bladder, urethra and vagina, and in chronic cystitis with haematuria, tincture in doses of 10 to 20 minims has been found useful.

In the treatment of *chronic bowel complaints*, especially chronic dysentery of Europeans red gum or Eucalyptus kino is useful ; the dose is from 5 to 10 grains as powder or in the form of syrup. Drop-dose of the oil with a little water or tepid milk is said to be a sure preventive against cholera.

Externally fresh young leaves are applied as a local stimulant to small wounds slow to cicatrise. The fluid extract suitably diluted is employed as a disinfectant lotion in gangrenous or foetid suppuration, foul ulcers and offensive discharges of all kinds and as a stimulant antiseptic application in certain chronic skin diseases ; also as a gargle in foetid breath, spongy and bleeding gums. The

fluid extract has been found successful locally in erysipelas of the face, leg and scrotum—(Dr. T. Williams).

Eugenia Acutangula.—See Baringtonia Acutangula.

Eugenia Caryophyllata.—See Myrtus Caryephyllus.

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330. EUGENIA JAMBOLANA; E. Fruticosa.

(*N.O.*—MYRTACEAE).

Sans.—Nilaphala; Rajaphala: Jambula Meghavarna. *Eng.*—Jambul, the black plum. *Hind.*—Jaman. *Ben.*—Kala-jam. *Guz.*—Jambudo. *Mah.* & *Kon.*—Jambul. *Tel.*—Naeraedu. *Tam.*—Nagum; Navel. *Mal.*—Naval. *Can.*—Naeralu. *Duk.*—Sittalchini.

Habitat.—Throughout the plains from the Himalayas to South India.

Parts Used.—The fruit, leaves, dried seeds and bark.

Constituents.—The seed contains a glucoside *jamboline*, a new phenolic substance, a trace of pale-yellow essential oil, chlorophyll, fat, resin, gallic acid, albumen, etc. The bark contains, tannin 12 p. c. and a kino-like gum. The phenolic substance isolated from jambul seeds, which has also been detected in Chinese rhubarb has since been identified as *ellagic acid*.

Action.—Bark, leaves and seeds are astringent. The juice of the fruit is stomachic, astringent and diuretic. The glucoside *jambuline* is said to have the power of checking the pathological conversion of starch into sugar in cases of increased production of glucose.

Uses.—The *bark* with or without the addition of other astringents is used in *decoction* in cases of chronic diarrhoea and dysentery and as a gargle in sore-throat spongy gums, etc. A *paste* made of the bark is applied over inflamed parts. The *juice of the tender leaves* either, alone or combined with carminatives such as cardamoms and cinnamon is given in goat's milk in the diarrhoea of children—(Chakradatta). The juice together with that of the leaves of mango and emblic myrobalan about a drachm each is administered in goat's milk and honey in cases of dysentery with bloody discharge—(Bhavaprakash). The *seed or stone* of the fruit is used as a remedy in diabetes ; it diminishes the quantity of sugar in urine and allays the unquenchable thirst of diabetes. For this the *liquid extract* prepared from the juice of ripe fruits is also suitable in doses of half to two drachms. The juice of black Jambul fruits and mangoes in equal parts relieves thirst very effectively in diabetes. The *powder* of dried seeds in combination with that of mango seeds is administered in doses of 10 to 30 grains with curds in cases of diarrhoea and dysentery ; also in enlargement of spleen and as a diuretic in scanty or suppressed urine. The *syrup or vinegar* prepared from the ripe fruit is also useful in spleen enlargement and an efficient astringent in chronic diarrhoea.

331. **Eugenia Jambos** of the same Family (*Hind*—Gulabjamun. *Ben.*, *Uriya* & *Kon.*—Gulab jam. *Sind.*—Jamu. *Duk.*—Jamle. *Coorg.*—Male-naeralu. *Can.*—Pannaeralu. *Eng.*—Rose apple. *Ger.*—Rosenapfel-Jambuse) is a native of East Indies cultivated in Indian gardens. The *leaves* and *bark* are astringent. The fruit

is edible having faint flavour of rose. A fine rosewater can be distilled from the fruit. The *seeds* are useful in diarrhœa and dysentery. In Bhamo, Upper Burma the leaves are boiled and used as a medicine for sore eyes.

Eugenia Acutangula.—See Barringtonia Acutangula.

332. **Eugenia Operculata** (*Hind.*—Rai Jam; Piaman; Jamava; Dugdugia; Thuti. *Santal*—Totonopak. *Chittagong*—Botee-Jam) is met with in sub-Himalayan forests, Cachar and Chittagong. The fruit is eaten for rheumatism; the root boiled down to the consistence of *gur* is applied and rubbed over the painful joints. The leaves are much used in dry fomentation; the bark is also employed medicinally.

Eugenia Racemosa—See Barringtonia Racemosa.

333. **Eulophia Vera**; E. Campestris; E. Nuda are the species of the Orchideae Order (*Eng.*—Witton root. *Sans.*, *Hind.*, *Ben.* & *Punj.*—Salib-misri. *Ben.*—Budbara. *Hind.*—Goruma. *Santal.*—Bongataini. *Nepal.*—Hatti paila. *Guz.*—Salum. *Pers.*—Sungmisri. *Mah.*—Bhuikakali; Ambarkand; Mankand. *Tel.*—Goruchettu; Unaniturphylla; Saturyan Orchis). Man—neck; Kand—tuber: Tubers resembling in appearance scrofulous glands in the neck. The tubers contain large quantities of white mucilage and ash 3·6 p. c. The tubers are, in action astringent, nutritive aphrodisiac and blood-purifier; also anthelmintic. The tuber is a fair substitute for Salep (Orchis mascula). It is used in scrofulous diseases of the neck both externally and internally; also administered for intestinal worms.

334. EUONYMUS (Atropurpurcus) B. P. E. Crenulatus; E. Pendulus E. Tingens; E. Europoeus; E. Americanus; E. Theophrasti.

(*N.O.*—CELASTRACEAE.)

Eng.—Bitterash; Dogwood; Pegwood; Indian arrowwood; Prickwood; Burning bush; Strawberry tree; Skewerwood; Spindlewood. *Fr.*—Fusain. *Ger.*—Spindelbaum. *Hind.*—Barphali; Shikhi; Rangchul; Guli; Papar; Chopra; Kunku; Kesari.

Habitat.—Western Peninsula, temperate Himalaya, Niligiris, and shady places.

Parts Used.—The bark of the root—wahoo bark.

Constituents.—The bark contains tannin, sugar, but no alkaloid; an amorphous bitter principle *Euonymin*; atropurpurin indentical with dulcite; resins, asparagin; euonic acid, fixed oil, albumen, wax, starch and ash 14 %. *Euonymin* is soluble in water, alcohol and ether.

Preparations.—Extract, dose.—1 to 5 grs; Liquid Extract (not miscible with water) dose.—1 dr. Tincture (1 in 5), dose.—10 to 40 minims; Extract Euonymi siccum (B. P.)—Euonymin, dose—1 to 2 grs.

Action.—Euonymus is nauseous, emetic and purgative; hepatic stimulant, diuretic, antiperiodic, antiparasitic and tonic. The action is similar to that of podophyllin. It is generally associated with aloes, jalap, rhubarb or colocynth. It increases the flow of bile and promotes other secretions. In over-doses it is a gastro-intestinal irritant.

Uses.—It is a good remedy for torpid liver, habitual constipation, dropsy, pulmonary affection and pediculi;

with pepsin it is given in indigestion, flatulence etc. The inner portion of the bark of E. Tingens is used by the Hindus to make sectarian marks on the forehead. It is also used like *Mamiran* to subdue inflammation of the eyes.

335. **Euphatorium Ayapana**; E. Perfoliatum; E. Aromaticus; E. Triplinerve, are the species of Compositae (*Hind. Ben. & Mah.*—Ayapana. *Guz.*—Allipa. *Tam. & Tel.*—Ayappanii. *Kon.*—Ayapanum)—Native of Brazil, cultivated in various parts of India, in damp places, meadows and river-banks. The herb contains a volatile oil and neutral crystalline principle *Ayapanin*. The herb including its dried leaves, flowering-tops and twigs is used medicinally in the form of *infusion* (1 in 20) in doses of half to two ounces, as a bitter tonic, expectorant, diaphoretic and antiperiodic. In full doses it is aperient given in derangement of the stomach and bowels, dyspepsia, cough and ague. The *hot infusion* is given in the cold stage of ague and in the state of depresssion preceding the acute inflammatory affections. It may be compared with chamomile in its effects. In small doses it is stimulant and tonic. It is said to have also antiscorbutic and alterative properties. Fresh *leaves bruised* are applied to foul ulcers and to bites of venomous reptiles. Also internally the drug is given as an antidote to snake-bites. The infusion when used in the cholera epidemic of Mauritius is said to have been found valuable for restoring the warmth of the surface, the languid circulation etc. The *hot infusion* is very highly spoken of in the cure of yellow fever in America. The dose of the fluid extract is from 10 to 30 minims.

336. Euphatorium Cannabinum.—This is a native of the temperate Himalaya and Europe (*Eng.*—Hemp Agrimony. *Ger.*—Water-hauf. *Fr.*—Origan aquatique). The *root* and *leaves* have diuretic and in large doses, emetic properties. In Holland it is used in jaundice, scurvy, foul ulcers, and those swellings of the feet to which the turf-diggers there are much exposed. An infusion of 1 oz. of the dried leaves in a pint of water may be used daily; if taken hot it is a good diuretic. The leaves and flowers are found to contain a white bitter alkaloid soluble in other which forms a crystalline sulphate.

337. EUPHORBIA ANTIQUORUM.

(*N.O.*—EUPHORBIACEÆ.)

Sans.—Vajratundi; Vajradantaka; Gandira: Mahataru; Snuhi; Vajra: Sehunda. *Eng.*—Triangular Spurge. *Hind.*—Tidhara: Sehund. *Ben.*—Narsij: Tikatasij; *Mah.*—Tridhari; Navadunga. *Tel.*—Bommajemudu. *Tam.*—Shadurakikally. *Mal.*—Chaturkalli. *Can.*—Katak-kalli; Mudumula or Bonthekalli. *Kon.*—Nivali; Padnival; Tirikon. *Guz.*—Tandhari: Thohar. *Malay.*—Schadid kalli. *Fr.*—Euphorbades ancien. *Ger.*—Wolfsmilk der Alten.

Habitat—A small tree common in India.

Parts Used.—The juice from the branches; the stem, root and root-bark.

Constituents.—The dried juice contains *Euphorbium* 35 p. c., two resins., one soluble and the other insoluble in ether; Caoutchouc 1·5 p. c., and gum.

Action.—Purgative, emetic, alterative, rubefacient and vesicant.

Uses.—The fresh *milky juice* or gum which flows from the branches is an acrid irritant applied externally

to relieve warts and other cutaneous affections and also to relieve pain of gout, rheumatism, toothache, etc. The juice mixed with the flour of Cicer Arietinum and roasted is administered in pills in gonorrhoea; when mixed with cantharides it forms what is called gout-plaster; but it must be used with great caution as it is a dangerous irritant application. Internally it is a powerful emetic and a violent purgative, even in very small quantities. Mixed with burnt borax and common salt it is applied to painful joints and swellings. A *plaster* made *from the roots* and mixed with asafoetida is applied externally to the stomachs of children suffering from worms. The *bark of the root* is purgative and the *stem* in decoction is given in gout but with much care. When taken internally it acts as a drastic purgative: it is employed in nervous diseases, dropsy, palsy, deaf ness and amaurosis. The *stem fried, powdered* and sprinkled over old ulcers promotes healing; the stem warmed and applied as a covering to whitlows or felons at the ends of fingers has the effect of fomentations and warm poultices rendering the nail and skin supple and favouring the formation and discharge of the matter. The *gum-resin boiled in oil* forms an effective application to scrofulous and other inveterate ulcers. But *all the preparations of this plant should be employed with much care.*

338. **Euphorbia Helioscopia** (*Hind.*—Herruseeah; Mahubi. *Punj.*—Gandabhuti; Dudai kulfa dodak; Chatriwal) is found throughout Punjab; grown in Niligiri hills. The *milky juice* is applied to eruptions and the *seeds* are given with roasted pepper in cholera.

The juice is used like a liniment in neuralgia and rheumatism. The *root* is anthelmintic.

339. EUPHORBIA NERIFOLIA. E. Ligularia; E. Nivulia.

(*N.O.*—EUPORBIACEAE.)

Sans.—Snoohi; Vajra; Patrasnuk; Svarasana. *Hind.*—Thohar. *Ben.*—Mansasij. *Mah.*—Vayinivadunga; Thora. *Tel.*—Akujimudu. *Bom.*—Neverang. *Tam. Can. & Mal.*—Ilaikkalli. *Kon.*—Kantaro; Pannanivali. *Eng.*—Common milk hedge. *Arab.*—Dihu Minguta.

Habitat.—This leafless shrub is found in Central India and cultivated in Bengal. E. Ligularia is held sacred to the snake-goddess *Manasa*. The word Manasa-sij is derived from that word Manasa. Superstitious people approach this tree with offerings praying to be delivered from snake-bites.

Parts Used.—The juice and root.

Constituents.—Euphorbon, resin, gum, caoutchouc, malate of calcium, etc.

Action.—Juice is purgative and expectorant; locally rubefacient like that of E. Antiquorum.

Uses.—The *milk-juice* of this tree is used by Vaidyans in medicine as drastic cathartic. Cloves, peppers, chebulic myrobalans and *trivrit* root etc., are soaked in this juice for some months and then dried and used in the enlargement of liver and spleen; syphilis, dropsy, leprosy, *etc.* For instance:—Take cloves 4 ounces and soak them into one seer of the milk for 40 or 50 days. Then rub the whole into a morter; the weight of this highly perfumed mass will be 12 ounces; now mix well in

this mass, 360 grains of *Rasakarpur* called "corrosive sublimate"; of this whole 180 pills are prepared. Two of such pills are administered to a patient at bed time, coated with a little fresh cream, so that the pills may be swallowed carefully without touching teeth. From the early morning till 10 a.m. cathartic action will continue with watery stools. The patient should be given lukewarm aqua aniseed 2 to 4 ounces after every motion; bread with butter freely should be given as a diet. In 20 to 40 days a patient suffering with any of above diseases is said to be cured, as has been seen in a number of such bad cases—(Gupta). As expectorant, especially in asthma, it is given in doses of 5 drops, mixed with a little honey or syrup.

Dr. M.C. Koman tried it and found it very beneficial in asthma; he prepared a succus consisting of equal parts of the juice of this plant and simple syrup and administered it in doses of 10 to 20 minims three times a day in cases of asthma and found it to relieve the fits completely. For asthma, *madar* flowers, *agadha* root and *gokaran* root are steeped in the juice, powdered, and given with honey and chebulic myrobalans; dose is 4 grains. Heated with salt it is given in whooping cough, dropsy, leprosy, enlarged liver and spleen, dyspepsia, jaundice, colic etc. The juice mixed with ghee is given in syphilis, in visceral obstructions and in spleen and liver enlargements due to long continued intermittent fevers. *Externally* the juice is applied to remove warts and similar excrescences; and heated with or without the gum of E. Resinifera it is dropped into the ear to afford relief in earache; mixed with soot it is used as an *anjan* in ophthalmia. The juice

is largely used with clarified or fresh butter as an application to unhealthy ulcers and scabies. Applied to glandular swellings it prevents suppuration. Mixed with Margosa oil it is applied to the limbs contracted from rheumatism. Turmuric powder mixed with the juice of Euphorbia nerifolia is recommended to be applied to piles. Thread steeped in the above mentioned mixture is used in ligaturing external haemorrhoids.—(Chakradatta). The *root-bark* boiled in rice-water and arrack is given in dropsy. The *root* mixed with black-pepper is employed in snake-bites both internally and externally. The *stem* is roasted in ashes and the *expressed juice* with honey and borax is given in small doses to promote expectoration of phlegm. The *pulp of the stem* mixed with fresh ginger is used to prevent hydrophobia.

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340. EUPHORBIA PILULIFERA; E. Hirta; E. Parviflora.

(*N. O.*—EUPHORBIACEÀE.)

Sans.—Raktavinduchada. *Eng.*—Australian asthma-weed, snake-weed and cat s hair. *Hind.*, *Bom.* & *Guz.*—Dudhi. *Mah.*—Nayati; Dudhali; Goverdhan. *Can.*—Achchegida; Barasu. *Tam.*—Amum; Patchaiaressi. *Tel.*—Bidari; Nanabalu. *Mal.*—Nelapalai. *Kon.*—Dudurli.

Habitat.—Abundant in waste grounds, seen after the rains.

Parts Used.—The herb.

Constituents.—A gum resin which is the active principle, wax, caoutchouc, chlorophyll, resin, tannin, sugar, mucilage, calcium oxalate, carbohydrates and albuminoids.

Action.—Demulcent, antispasmodic, anthelmintic and local parasiticide. It has a sedative effect on the mucous membrane of the respiratory and genito-urinary tract. The active principle first accelerates then slows the respiratory movements and cardiac centres. It irritates gastric mucous membrane. Its action is chiefly exerted through the pneumogastric nerve paralysing the heart and respiration.

Preparations.—Solid extract, dose—½ to 2 grains. Fluid extract, dose:—30 to 60 minims; Decoction of the fresh plant (1 in 40), of the dried plant (1 in 80), dose:—1 to 2 ounces. Tincture (1 in 5), dose.—10 to 30 minims; Paste of the leaves.

Uses.—This is a popular remedy for cough, coryza, hay-asthma, bronchial affections and diseases of the respiratory passagss generally, also given for worms, bowel-complaints and as *paste* with sugar in gonorrhoea and other venereal diseases In dyspnoea due to asthma, bronchitis of the old people, emphysema and pulmonary cardiac disease, angina pectoris, the fluid extract or the tincture is most suitable. Its action is not cumulative. It is a very useful remedy in acute and chronic dysentery, in coryza where arsenic and iodide of potassium have failed. It should be given after meals. Dr. M. C. Koman who had investigated the effects of the drug only very recently says in his Report on Indigenous Drugs:—"It has been found by me very beneficial in cases of asthma. I have been using a tincture of it in my private practice in diseases of genito-urinary tract, in chronic bronchitis and asthma. The result has been very satisfactory. It is a drug which should find a place in the treatment of such

diseases. The tincture of the drug was given in 15 to 30 drop-doses in cases of asthma and bronchitis in the hospital with very beneficial effect." It is also an antidote to poisons; it kills small animals. Locally it is applied for the cure of ringworm.

341. **Euphorbia Resinifera** is a native of Morocco, the dried juice of which is the gum Euphorbium and known in the Indian Bazaars as *Farbiyun* or *Afarbiyun* or *Farfyun*. When fresh it is yellow, translucent and easily soluble in olive oil; when old it turns reddish yellow and the odour is acrid. Medicinally it is a useful application in sciatica, palsy, colic, lumbago and "removes phlegmatic humors from the joints and limbs. Internally it acts as a purgative of bile and phlegm." However used it should always be diluted with such substances as oil of roses (fatty extract), bdellium, extract of liquorice, tragacanth or gum-arabic; the dose is one carat (4 grains). When given internally to women, it causes abortion but a pessary containing one grain of euphorbium causes the mouth of the uterus to contract and prevents abortion. Pessaries containing larger quantities of the drug produce abortion. Mixed with honey it is used in purulent ophthalmia. "Three dirhams is a fatal dose, causing ulceration of the stomach and intestines; the antidotes for it are sour milk, the juice of sour pomegranates and camphor." Haji Zein mentions its use "as a snuff when diluted with beet-juice in certain affections of the brain, as a dusting powder to remove proud flesh and as an enema in obstructed menses". In modern medicine euphorbium is never given internally, but it is still sometimes employed as an errhine, after

having been largely diluted with some inert powder, in amaurosis, deafness and other chronic brain diseases. Its use as a counter-irritant is now almost entirely confined to veterinary practice. An analysis of selected fragments free from extraneous matter shows it to be composed of amorphous resin, euphorbon, mucilage, malates chiefly of calcium and sodium and mineral compounds.—(Dymock).

342 Euphorbia Thymifolia (*Sans.*—Raktavandachada. *Ben.*—Seutkherua ; Raktakeru. *Hind.*—Nigachuni. *Punj.*—Dodhak; Hazardana. *Mah.*—Lahan-nayati. *Tel.*—Peddavari. *Tam.*—Sittra-paladi. *Kon.*—Dudini. *Fr.*—Euphorbe a feuilles de thym.) is found in tropical India ; it is distinguished by its thyme-like leaves. The plant contains a crystalline alkaloidal principle allied to quercetrin. In action it is aromatic, astringent, demulcent, stimulant, vermifuge and laxative. The *seeds* and the small *leaves* are used in the form of *powder* given in butter-milk in bowel complaints of children, worms and gonorrhoea; the *root* is given in amenorrhoea ; dose is from 5 to 20 grains. It is used also in *decoction* (1 in 40) in doses of 1 to 2 ounces. The *expressed juice* of the *powdered plant* is given with wine as a remedy for bites of venomous reptiles,, and applied externally to the bitten part. It is also applied to ringworm, and mixed with chloride of ammonium it is applied for the cure of dandruff.

343. EUPHORBIA TIRUCALLI.

(*N.O.*—EUPHORBIACEAE.)

Sans.—Dugdhika; Trikantaka; Vajradruma. *Eng.*—Milk-hedge; Indian Tree-spurge. *Hind.*—Barki-thohar; Barki-sehund. *Arab.*—Dihan. *Guz.*—Thora danadalio; Khurasani-thora. *Ben.*—Lankasij. *Tel.*—Kada jemudi. *Tam.*—Kalli. *Can.*—Mondukalli. *Mah.*—Kada nivali. *Bom.*—Netario-thora. *Mal.*—Tirukalli. *Kon.*—Baddinivali. *Java.*—Kayoo-orb. *Fr.*—Euphorbe antivenerien; Euphorbe tirucalli.

Habitat :—This plant is a native of America but has become acclimatised and grows freely in all parts of India.

Parts Used :—Milky juice and bark.

Constituents :—Euphorbon, gum, resin, caoutchouc, malate of calcium etc.

Action :—The milky juice is in small doses, purgative, in large doses an acrid irritant and emetic. Externally it is rubefacient.

Uses:—The *milky juice* obtained by pricking the succulent stems and fleshy leaves is applied to itch and scorpion bites. It is also a warm, rubefacient remedy in rheumatism, toothache, etc. The milky juice is employed to raise blisters especially in syphilitic nodes; given with butter it is said to cure affections of the spleen and to act as purgative in colic and bowel complaints. Like the juice of E. Nerifolia it is used in earache, and also in whooping cough, asthma etc., etc. The *decoction of the tender branches* as also that of the *root* is administered in colic and gastralgia. In Java the *bark* is used in applying to fractures.

Euryale Ferox—See Nymphaea Stellata.

344. Eurycoma Longifolia (*Tam.*—Usi-thagarai) of Simarubeae genus is a native of Malayan peninsula. The root of this small plant is said to be a specific in malarial fever next only to quinine. A decoction of this drug (1 in 10) in half to one ounce doses was administered to mild cases of malarial fever and was found to be useful—(Dr. M. C. Koman).

345. Evolvulus Alsinoides & E. Hirsustus are species of Convolvulaceae met with throughout India and Ceylon (*Sans.*—Vishnukranta; Vishnugandhi. *Hind.*—Shankapushpi. *Mah.*—Shankhavalli. *Kon.*—Shankvel. *Tel.*, *Tam*, *Can.*, & *Mal.*—Vishnukranti). They contain a yellow neutral fat, an alkaloid, an organic acid and saline substance. The whole herb is used medicinally in the form of decoction or infusion (1 in 40) in doses of 2 to 4 ounces. In action it is tonic, alterative and febrifuge; also anthelmintic and antiphlogistic. With cumin and milk it is used in fever, nervous debility and loss of memory; also in syphilis, scrofula etc. It is said to be a sovereign remedy in bowel complaints especially dysentery. In fevers attended with diarrhoea or indigestion a decoction of the drug with Ocimum sanctum is administered.

346. Execaria Agallocha or E. Camettia or Arbor Execans is a species of Euphorbeaceae (*Sans.* & *Ben.*—Ugaru; Gaourai; Gangwa; Geria. *Hind.*—Gangiva; Tejbala. *Mal.*—Kametti; Phungali. *Tam.*—Tilla-chedi. *Tel.*—Tillachettu; Chilla. *Can.*—Haro. *Eng.*—Tiger's milk tree. *Fr.*—Arbre aveuglant) found in the forests of India, plentifully in Cochin and Travancore, in salt swamps near the sea. All parts of the twig abound in

an acrid milky juice; the *caoutchouc* in 1 to 2 grain doses is used as a purgative and alterative in epilepsy; it is locally applied to inveterate ulcers, leprous sores etc. *Tejbala*, a soft reddish substance obtained from the lower part of the trunk and roots is reputed as an aphrodisiac tonic. A decoction of the leaves is given twice a day in ¼ tea-cupful-doses in epilepsy. The decoction is an external application to ulcers.

347. **Fagonia Arabica;** F. Mysorensis; F. Bruguieri; F. Cretica are the small spiny shrubs with erect branches, belonging to Zygophylleae order (*Sans.*—Dusparsha; Dhanvayas. *Punj.*—Samada. *Sind.*—Drammaha. *Cutch.*—Dharama. *Himalayas.*—Spalaghzai. *Pers.*—Badavard. *Guz. & Mah.*—Dhamasa) found throughout N.W. India.-Sind, Punjab and Deccan. Medicinally their leaves, twigs and juice are the parts used. In action they are found to be bitter tonic, diuretic and astringent. The leaves and twigs are also supposed to possess cooling properties and are used in the form of decoction or infusion (1 in 10) as gargle in sore mouth and stomatitis; the juice is boiled with sugar-candy until quite thick and a small quantity allowed to dissolve in the mouth frequently. The juice or a poultice of the bruised leaves is said to prevent suppuration when applied to open wounds. *Cold infusion* of the stem and leaves (1 in 16) infused for 12 hours and strained is given in doses of two to four ounces as a bitter and astringent tonic. In irritability of the skin and intense scratching, the *decoction* of the plant is used as a medicated bath with benefit. In the Peshwar valley a decoction of F. Bruguieri is given as a tonic and febrifuge, and as a prophylactic against small-pox it is given to children. It is used as

an application to tumours. In fevers steam from decoction of the dried plant plant is inhaled.

348. **Farsetia Aegyptiaca,** F. Hamiltonii; F. Jacquemontii are the species of Cruciferae genus (*Punj.*—Mulei; Faridbuti; Farid muli) found in the sandy places, in the salt ranges, especially in Sind, Punjab and upper Gangetic plain. All the above three species are considered specific for rheumatism. They are pounded and taken as a cooling medicine.

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349. FERONIA ELEPHANTUM, or Anisiphalins Rumphii or Crataeva Vallangai.

(*N.O.*—Rutaceae.)

Sans.—Kapitha; Kapi-priya; Dadhi-phala. *Fr.*—Feronia geant. *Ger.*—Elephantenapfel. *Eng.*—Elephant or Wood-apple. *Hind.*—Kavat. *Guz.*—Kotha; Kavit. *Duk.*—Katbel; Khæt. *Ben.*—Kathbel. *Burm.*—Mahan. *Mah.*—Kavitpana. *Santal.*—Kavatha. *Tel.*—Velaga. *Tam.*—Vilakpittam; Vilaphalam; Vellil. *Can.*—Bælada-phala; Bilva-phala. *Arab. & Pers.*—Kabita. *Mal.*—Vilav. *Kon.*—Belpatri-phal. *Cing.*—Diwal.

Habitat.—Met with throughout India, cultivated for its fruit.

Parts Used.—The fruit, gum, leaves, bark and pulp.

Constituents.—The pulp contains a large quantity of citric acid, mucilage and ash containing potash, lime and iron. The leaves yield an essential oil similar to that obtained from Bael leaves.

Action.—The fruit is aromatic, antiscorbutic, astringent (when unripe), and refrigerant. The gum from the

stem is demulcent. The leaves are aromatic carminative and astringent.

Uses.—The *pulp* of the ripe fruits, tastes like coagulated milk and is edible; it is useful in salivation, sore-throat and other affections of the gums and throat; in the form of *sherbat* or *chutney* made with the addition of salt, tamarind and spices like *sunth*, black pepper etc., it is useful in hiccup, dyspepsia, biliousness, throat affections etc. The *pulp with honey* and *pipli* is given for hiccup and difficulty of breathing. A *jelly* much resembling black-current jelly but with a more astringent taste is made from it. The pulp is also useful externally as an application to bites of venomous insects; the *powdered rind* may be also used. The *unripe fruit* is employed alone or in combination with *bela* and other medicines in diarrhoea and dysentery. The transparent *gummy substance* exuding from the stem when cut or broken resembles gum arabic and may be used in bowel affections and to relieve tenesmus; reduced to powder and mixed with honey it is given in dysentery and diarrhoea. The *young leaves* have a fragrant smell like anisi and their *juice* mixed with milk or with curds and sugar-candy is given in biliousness and the juice is externally applied to the skin eruptions caused by biliousness. The *bark* is prescribed *in powder* or *decoction* for biliousness. Under the name of *Pancha Kapitha i.e.* the five products of Faronia a medicine is prepared which contains the flowers, roots, leaves, bark and fruit. A *medicated oil* is also made of the five parts of the plant which is used for applying to the whole body. A compound powder known as *Kapithaashtaka churna* is

recommended in SARANGADHARA, which is used in doses of one drachm in chronic diarrhoea, dysentery with loss of appetite and in affections of the throat. It is given in sweetened milk or mixed with honey. It is prepared thus:—Take of the pulp of unripe wood-apples eight parts, sugar six parts, pomegranate juice, tamarind pulp, *bela* fruit, flowers of Woodfordia floribunda *(dhataki)*, *ajmoda* and long-pepper each three parts, black-pepper, cumin seeds, coriander, long-pepper root, root of Pavonia odorata (*bala*), *sonchal* salt, *ajowan*, cardamoms, cinnamon, *tejapatra*, flowers of Mesua ferrea (*nagakesara*), ginger and plumbago root, each one part; powder the ingredients finely and mix. Other preparations are fluid extract, dose:—½ to 1 drachm and syrup of the fruit, dose:—¼ to ½ ounce, useful in dyspepsia, in quenching the thirst of fevers and in scorbutic conditions.

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350. FERULA ASAFOETIDA; F. Alliaceae; F. Narthex; F. Scorodosma.

(*N.O.*—UMBELLIFERAE).

Sans.—Bhutnasan; Hingu; Sulanasan. *Can.*—Hingu. *Eng.*—Asafoetida. *Hind., Duk., Ben., Punj., Guz., Mah., & Kon.*—Hing. *Cash.*—Yang. *Tel.*—Inguva. *Tam. & Mal.*—Perungayam. *Cing.*—Perunkayam. *Burm.*—Shinka or Singu. *Malay.*—Hingu. *Arab.*—Tyib. *Pers.*—Angusthagandha. *Sind.*—Vaghayani; Vagharni. *Fr.*—Ferule Asafoetida. *Ger.*—Stinkendes Steckenkraut.

Habitat.—This small plant grows wild in Punjaub, Cashmere, Persia and Afganistan.

Parts Used.—The gum-resin (asafoetida) obtained by incision from the root.

Constituents.—Volatile oil 5 p. c., containing essential oil of garlic—allyl, allyl persulphide and two terpenes; a resin 65 p. c. a ferulic acid ester of asaresino-tannol; free ferulic acid; gum 25 p.c., and ash 4 p.c. also malic, acetic, formic and valerainic acids. The resin on dry distillation yields *umbelliferon* which is not found in the Indian variety. When fused with potash it yields resorcin and pyrocatachuic acid.

Action.—Stimulant; carminative antispasmodic, expectorant and slightly laxative; also anthelmintic, duiretic, aphrodisiac and emmenagogue; it is a nervine and pulmonary stimulant; it acts on the organs of circulation and secretion, which it stimulates and also increases the sexual appetite. If long continued even in moderate doses, it gives rise to alliaceous eructations, acrid irritation in the throat, flatulence, diarrhoea and burning in the urine. The volatile oil is rapidly excreted and may be found in the urine, milk and sweat.

Preparations.—Pills, Powders, Plaster, Mixture, Emulsion and Enema.

Uses.—Asafœtida, the concrete juice obtained from the plant is in popular use in India for many centuries, especially as an ingredient in condiments. It is a valuable remedy for hysteria, flatulence, flatulent colic and spasmodic affections of the bowels especially when connected with hysteria, in fainting, nervous palpitations, hypochondriasis and other affections due to hysteria, in the spasmodic, and the obstinate coughs of childhood remaining after attacks of inflammation and also in the

advanced stages of whooping cough, pneumonia and bronchitis of children, and in the chronic bronchitis and asthma of adults. It is fried before being used. Raw and unfried asafoetida is said to cause vomiting. It may be given in the form of 1 to 2 grains-pill or in that of a thick and milky emulsion (in doses of half to one ounce) prepared by rubbing down in a mortar five drachms of asafoetida in a pint of hot water and straining and setting aside to cool. To relieve fits of asthma inhalation of asafoetida smoke called *Hingvadi Dhum* is employed:—Asafoetida and a common pulse known as *Udid* (Phaseolus Roxburghi) are put on smokeless fire and the smoke of the burnt medicine is inhaled by means of a pipe. For hysteria and allied complaints *pills* made of asafoetida and aloes $1\frac{1}{2}$ grains each and a little honey are very beneficial. In flatulent distension of typhoid fever, cholera, convulsions and flatulent diseases of children and in peritonitis it is used as an enema, two drachms of asafoetida being rubbed down in a pint of water or thin gruel. A tea-spoonful of a *mixture* 1 in 50 of water or thin gruel, with a little omum water added is often very effectual in relieving the flatulent colic of children. For flatulency a *powder* made of asafoetida, cardamom, ginger and rock-salt 1 grain each is also very beneficial. It may also be tried in the convulsions of pale, weakly children. For colic a powder containing equal parts of asafoetida, *ajowan*, chebulic myrobalans and rock-salt is a remedy in doses of 10 grains. The *plaster* of asafoetida is a good stimulant application to the chest of children suffering from whooping cough. Asafoetida is useful as an anthel-

mintic for round worms in children; asafoetida *enema* is an effectual means of removing thread-worms from the rectum and lower bowel. As anaesthetic asafoetida is employed in hemicrania and dental caries. An emulsion (5 grains of the gum to one drachm of water) is dropped into the nostrils to relieve the pain of hemicrania; in dental caries a mixture of opium and asafoetida is placed in the hollow tooth to relieve the ache. In diarrhoea and the early stages of cholera a *pill* consisting of asafoetida, camphor and black-pepper 1 grain each and opium $\frac{1}{4}$ grain is said to be of great value. Asafoetida is given to increase the lochial discharge after child-birth; it is prepared and administered thus;—It is first fried; a small quantity is then mixed with garlic and palmyra jaggery and a bolus is made and given to the patient every morning. It is a valuable remedy in the treatment of habitual abortion. Dr. Turzza quotes several Italian authorities who have been successful in treating cases of habitual abortion since 1885. He follows the prescription of Dr. P. Negri of Venice;—6 grammes of asafoetida are made into 60 pills (each about a grain and a half). Directly the pregnancy is suspected one such pill is given twice a day; the dose is then slowly and gradually increased to ten pills a day and then gradually reduced till confinement. Cases having three to five previous abortions, cases complicated with permetritis, catarrhal endometritis etc., and also cases in which abortion at sixth month was threatening are reported to have been treated with success by this drug. To increase the appetite and digestive powers and to cure flatulence a compound powder called *Hingavashtaka*

Churna is recommended; it is made up thus:—Take of fried asafoetida, ginger, long-pepper, black-pepper, *ajowan*. cumin seeds, nigella seeds and rock-salt equal parts; reduce them to powder and mix. Dose—ten to twenty grains, to be taken with the first morsel of rice and clarified butter taken at breakfast—(Bhaishajyratnāvali). Some writers recommend the above powder to be made into pills with lemon-juice. It is useful in indigestion and torpidity of liver also. For nervousness 5 grains of asafoetida made into a pill with a little soap is recommended. In flatulent colic with costiveness, a suppository made of asafoetida, rock-salt and honey and smeared over with clarified butter is introduced into the rectum—(Chakradatta). For ringworm asafoetida is applied as a paste; it is also a good application over scorpion bites. In hemiplegia, stiffneck, facial palsy, sciatica and other diseases of the nervous system, fried asafoetida is given along with a compound decoction called *Mashabalâdi* (Chakradatta).

351. **Ferula Galbaniflua** (*Sans.*—Gaoshira; Javashira. *Eng.*—Galbanum. *Arab.* and *Pers.*—Barzhad; Kinneha. *Hind.* and *Duk.*—Gandhabiroza; Barijagonda) is a species met with in North west India, Persia, Smyrna and coasts of the Mediterranean. The *gum-resin galbanum* contains a volatile oil isomeric with turpentine, which contains no sulphur. It also contains a resin, a gum and an insoluble substance. It yields on *dry distillation* a blue oil and umbelliferon, a tasteless substance in satiny crystals. In action it is stimulant, expectorant and antispasmodic similar to Ammoniacum but less powerful than asafœtida. In intestinal, vaginal

and uterine catarrh, in paralytic affections, hysteria, chronic bronchitis and asthma it is used in the form of pill. A *compound pill* consisting of galbanum, asafœtida and myrrh 2 ounces each and treacle one ounce, prepared by heating all together by means of a water-bath and stirring the mass until it assumes a uniform consistence is valuable, especially in the dyspepsia of hysterical women. *Externally* it is used in the form af *ointment*, mixed with vinegar, it is a useful application for acne. An ointment made of galbanum, sulphide of mercury, red oxide of lead and pure tin each 1 part and ten parts of gingelly oil is an excellent application over painful rheumatic joints.

352. **Ferula Jæschkeana** or Fœtidissima is a species of Cashmere. It yields a gum-resin which is applied to wounds and bruises. Most of the commercial gum-resin Asafœtida is obtained from this species and F. Alliaceæ.

353. **Ferula Orientalis** or F. Tingitana or Dorema Ammoniacum or D. Glabrum is a species growing in Persia and Afghanistan, on silicious soil, deserts and barren regions (*Eng.*—Ammoniac, *Afghan* and *Tam.*—Kandal. *Hind.*—Samagh Hamama. *Pers.*—Ushna Ooshak. *Bom.* and *Guz.*—Ushaka. *Tel.*—Gamanayakam). The gum-resin exuding from the flowering and fruiting stem is called Ammoniacum B. P. It occurs in tears or masses of a pale yellowish brown colour. It contains a volatile oil, gum, resin, moisture and ash. The volatile oil differs from that of asafœtida in that it does not contain sulphur or phosphorus. The resin does not yield umbelliferon ; it consists of an acid and

two resins, one soluble and the other insoluble in ether, but soluble in volatile and fixed oil. In action Ammoniacum is antispasmodic, diaphoretic, diuretic, emmenagogue, expectorant and stimulant. It is chiefly given as an expectorant in doses of 5 to 15 grains or half to one fluid ounce of the mixture with other expectorants in affections of the chest unassociated with inflammation. *Externally* Ammoniacum is applied to indolent ulcers.

354. **Ferula Suaveolens** (*Hind.*—Sumbul) is a species found in Afghanistan. Its scented root which contains a gum-resin is used medicinally as a substitute for asafœtida.

Ferula Sumbul—See Nardostachys Jatamansi.

355. **Ficus Arbutifolia** (*Hind.* and *Ben.*—Pakur. *Fr.*—Figiner-a-petit fruits) is an Urticaceous species found in India; the juice of its branches or the milky exudation is applied to poisoned wounds, indolent ulcers and it is used as a resolvent.

356. **Ficus Asperrima** is another species of Urticaceæ family (*Sans.*—Shakataka. *Hind.*—Sheoda; Kalumar. *Mah.* and *Bom.*—Kharoti; Kharvat. *Guz.*—Sariro. *Tel.*—Pindichettu; Karakarbuda. *Can.*—Khargas. *Kon.*—Kharvant) found in Central India, Deccan and Ceylon. It contains a crystalline principle soluble in alcohol; an inorganic acid, white calcareous matter and ash 18 p, c. In action it is alterative. It is used as *infusion of leaves* (1 in 10) in doses of 2 to 6 drachms. Both the *juice* of the plant and the *bark* are used in glandular enlargements of the liver and spleen. The juice is applied to cracks and fissures of the palms,

hands and soles of feet. The bark which is midly acrid is used as a tooth brush to remove the tartar or to cleanse the teeth. The leaves are used to polish ivory.

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357. FICUS BENGHALENSIS; F. Indica.

(*N. O.*—Urticaceae.)

Sans.—Vata; Sriksha; Bahupada; Shikhandin; Skandaja. *Eng.*—Banyan tree. *Hind.*—Vada. *Ben.*—Bar; Bargat, *Burm.*—Pyi-nyoung. *Mah.*—Vata-vraksha. *Tel.*—Marichettu; Peddamari. *Tam.* & *Can.*—Alamaram. *Mal.*—Paeral: Vatam. *Kon.*—Goeliruku; Vodaruku. *Fr.*—Figuier due Bengal.

Habitat.—This well-known tree is wild in the Lower Himalaya and is now found all over India.

Parts Used.—Milky juice and bark.

Constituents.—The bark contains tannin, wax and caoutchouc. The fruit contains oil, albuminoids, carbohydrates, fibre and ash 5 to 6 p. c.

Action.—Tonic and astringent; the bark is tonic and diuretic. The seeds or fruits are cooling and tonic. The young buds and the milky juice are astringent.

Uses.—The *milky juice* is useful as external application to pains and bruises, in rheumatism and lumbago, to the soles of the feet when cracked or inflamed, to the teeth and gums for toothache. *Internally* it is useful in dysentery and diarrhoea. An *infusion of the bark* (1 in 10) is said to have specific properties in the treatment of diabetes. A *decoction* of the bark, which contains about 10 per cent of tannin, is used as an astringent lotion in leucorrhoea with advantage. The *leaves* are heated and applied as a *poultice* to abscesses to promote suppuration

and discharge of pus. The leaves after they have turned yellow are given in decoction with roasted rice as a diaphoretic; three leaves are used for the decoction. The *root-fibres* in the form of decoction with or without the addition of honey are supposed to resemble sarsaparilla in action; they are useful in gonorrhoea. The infusion of the small branches is useful in haemoptysis. The *tender ends* of the hanging roots are given for obstinate vomiting. The *young buds* like the milky juice are astringent and useful in cases of dysentery and diarrhoea. The concentrated juice in combination with fruit is an aphrodisiac and also believed to be of much value in spermatorrhoea and gonorrhoea.

358. Ficus Benjamina or F. Comosa or F. Retusa (*Hind.* & *Ben.*—Kamrup; Zir. *Nepal.*—Juripakri. *Chota Nagpur.*—Jili. *Mah.*—Nandruk. *Bom.*—Pimpli. *Tel.*—Putrajanvi; Yerrajuvi; Nandireka. *Santal.*—Sunonijhar; Sunnunjon. *Kon.*—Dhavidek goli; Arek-gol) is a species found at the base of the Eastern Himalaya, Khassia Hills, Assam and the Deccan Peninsula. The *bark* of the root, the *root* itself and the *leaves* boiled in oil form good applications for wounds and bruises. The *juice of the bark* has a reputation in liver disease; the dose is one tola in milk—(Dymock). In rheumatic headache the leaves and bark pounded are applied as a *poultice*. A *ghrita* is prepared out of the juice and it is very useful in flatulent colic. It is prepared thus :—Take equal parts of the juice of the leaves of F. Benjamina, of the leaf-juice of *Tulsi* plant and *Ghee*, and boil until all the water has evaporated; do this again twenty one times, each time

adding fresh quantities of the juice of the two plants. The residuum is then ready for use. It is applied to the belly and fomentation with hot brick is practised.

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359. FICUS CARICA.

(*N.O.*—URTICACEAE)

Sans :—Anjira. *Eng* :—The Fig tree. *Hind. Pers., Afghan., Kon. & Mah* :—Anjir. *Ben* :—Doomoor. *Burm* :—Saphansi. *Tam* :—Shime-atti. *Tel* :—Tene atti : Modipatu.

Habitat :—This tree, a native of Asia Minor, is cultivated in many parts of north India for its fruits. Fresh figs are to be found in the Northern Indian bazaars.

Parts Used :—The dried fleshy receptacles—figs.

Constituents.—The fleshy receptacle—fig contains grape sugar 62 p. c., gum, fat and salts. The dried figs contain sugar, fat, pectose, gum, albumen and salts. The milky juice contains a peptonising ferment.

Action :—Cooling, laxative, demulcent and nutritious. The effects of the peptonising ferment of the milky juice on milk and fibrin are like those of papaine. It converts starch into sugar.

Uses.—The *figs* are wholesome, easy of digestion, and when used medicinally they are said to remove gravel in the kidneys or bladder and also obstructions of the liver and spleen. They are given to cure piles and in the treatment of gout etc. The milky juice is applied to cure ulcers in the mouth etc. Figs are said to be very efficacious in infantile liver. Equal parts of dried figs, decorticated almonds, *pistachu*, cardamoms, *charoli*, *bedana* and sugar-candy and a little saffron, all in powder, immersed in ow's ghee for 8 days, forms a very nutritious aphrodisiac

mixture; dose:—2 tolas in the morning daily. Fresh ripe figs 2 to 4 mixed with a little sugar-candy powder and exposed to snow during the night and eaten early in the morning is said to remove heat of the body; it should be continued for 15 days. The pulp or the fig split open and heated is occasionally used in the form of an emollient poultice to promote suppuration in gumboils etc. The fresh figs form a nice tonic to weak people who suffer from cracks in lips, tongue, mouth &c.

360. Ficus Elastica (*Fr.*—Figuier Elastique. *Eng.*—The Assam rubber-tree.) is indigenous to Assam, and contains about 30 p. c. of caoutchouc in its milky exudations.

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361. FICUS GLOMERATA & F. Racemosa.

(*N.O.*—URTICACEAE,)

Sans. & *Mah.*—Audumbara. *Eng.*—Cluster-fig; The Gular Fig or Country Fig tree. *Hind.*—Gular. *Ben.*—Jajna-dumar. *Tel.*—Attimanu; Moydi. *Tam. Mal.* & *Can.*—Atti. *Kon.*—Rumdi-ruku. *Mah.*—Umber. *Guz.*—Umbaro.

Habitat.—All parts of India.

Parts Used.—The root, root-bark, fruit, milky.juice and galls.

Constituents.—Tannin, wax and caoutchouc, and ash containing silica and phosphoric acid.

Action.—The bark, leaves and unripe fruit are astringent, carminative, stomachic and vermicide.

Uses.—The *bark, leaves* and *unripe fruit* are used externally and internally in dysentery. The *fruit* is edible; it is given in aphthous complaints, menorrhagia, haemoptysis etc., with sugar and honey; and when boiled

in milk it is a good remedy for visceral obstructions. In the diarrhoea of the pregnant the fruit with honey is given. The fruit is said to be efficacious in diabetes. Two ounces of figs boiled in half a pint of water for half an hour and strained forms an excellent gargle for sore-throat. A *bath* made of the fruit and bark is regarded as a cure for leprosy, *Powder of the seed* mixed with honey is said to be a specific in diabetes, reducing sugar in the urine, thirst and polyuria of diabetes. The *bark* is slightly astringent used in the form of fine powder in dysentery and diabetes, and in combination with gingelly oil, it is applied to cancerous affections. The *infusion of the bark* is given in diabetes; *externally* the bark is applied to ulcers. The *young leaves* crushed or reduced to powder or ripe figs mixed with honey or *gool* or sugar are administered in bilious affections. The fresh juice of the ripe fruit is given as an adjunct or vehicle to a metallic medicine for diabetes and other urinary complaints *e. g.* the preparation *Vrihat Vangeshwara rasa*. The fluid which yields on incision in the root is given mixed with cumin and sugar-candy in gonorrhoea as a tonic by Vaidyans. The *root-juice* is used *externally* as an application to glandular swellings. According to GRIHYA SUTRA a married woman in the 4th month of pregnancy should be rubbed with the fruits to fortify the foetus. The *root* is used in pectoral complaints and dysentery. A decoction of two tolas in weight of the roots is recommended in menorrhagia in AKSIR-UL-IMRAZ. It is also given in dysentery.

362. Ficus Hispida & F. Daemona are species found in Bengal and Coromandal coast (*Sans.*—

Ummettodumbara. *Ben.*—Kakoudumbar. *Hind.*—Katgular; Dumbar. *Guz.*—Janglian jir; Dhed-umbro. *Mah.*—Vede umde; Kharwat. *Tam.*—Pe-allippayam. *Tel.*—Verse atti-pandhlu. *Can.*—Adavi atti. *Kon.*—Vadli kharwant). Its constituents are tannin, wax, a caoutchouc-like substance and a glucosidal principle having the properties of saponin. The parts used medicinally are the bark and the fruit The bark is emetic and laxative. In *powder* or *decoction* (1 in 10) it is given in hepatic obstruction. Dose of the powder is 40 to 60 grains, and of the decoction half to one ounce. In 15 to 30 grain doses it is antiperiodic. A *poultice of the bark* is applied to buboes to disperse them or to bring them to maturity. For internal administration *seeds* of the ripe fruit dried and preserved from moisture in stoppered bottles are given in 1 drachm doses, which is equal to 4 to 6 of the ripe fruits. The figs of this plant promote the secretion of milk; and are also supposed to preserve the foetus in the womb.

363. **Ficus Oppositifolia** (*Ben.*—Kakadumar) is a species found in Bengal whose bark is antiperiodic and tonic, and fruits seeds and bark are used as emetics, The milky-juice is poisonous.

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364. FICUS RELIGIOSA.
(*N.O.*—Urticaceae.)

Sans.—Pippala; Shreevraksha; Sevya (worthy of worship). *Eng.*—Sacred Fig. The Peepul tree. *Hind.*—Pipal. *Ben.*—Asud; Ashwath. *Guz.*—Jari. *Duk.*—Anipeepul. *Mah.* & *Kon.*—Pimpala. *Tel.*—Ravichettu; Raiga. *Tam.*—Arashamaram. *Can.*—Rangi Basri; Ashvathamara. *Mal.*—Areyal.

Fr.—Figuier-ou-arbre des pagodes (ou de Dieu ou Conseils)
Ger.—Religioser Fiegenbaum.

Habitat.—This sacred peepul is a large tree found wild and cultivated in Bengal, Central India and the Lower Himalaya.

Parts Used.—The root-bark.

Constituents.—The bark contains tannin, caoutchouc and wax.

Action.—The seeds are cooling, laxative, refrigerant, and alterative; the leaves of young shoots are purgative. The bark is astringent. The fruit is laxative.

Uses.—The seeds are prescribed in the form of electuary and powder. The *bark* is useful in gonorrhoea and scabies in *infusion* or *decoction*. A decoction of the barks of the 5 varieties of figs (F. Religiosa, F. Bengalensis, F. Glomerata, F. Tjakela and the root bark of the *Neem* form *Pancha Valkala* or five barks) called *Pancha Valkala Kashaya* is used as a gargle in salivation, as a wash for ulcers and as an injection in leucorrhoea—(Chakradatta.) For *external application* in skin diseases caused by vitiated blood such as eczema, leprosy, rheumatism etc., a medicated oil called *Pancha Valkaladi Tailum* is highly recommended. The oil is prepared thus:—First make a decoction (*Kalkam*) of the barks of the 5 varieties of figs, Curcuma longa, and Hemidesmus Indicus. Then prepare an oil in the usual way with the addition to it of gingelly oil, root-bark of plantain, liquorice, cinnamon bark, cuscus grass, Costus (Aplotaxis Auriculata) and sandal (*chandan*). The *fruit* is laxative and helps digestion. It forms a very nutritious food for cattle. The fruit dried and powdered and taken in

water for 14 days is said to remove asthma; also to promote fruitfulness in women. The *leaves of young shoots* are used in skin diseases. The *tender shoots* boiled in milk and administered together with a sufficient quantity of sugar added to taste make a very nutritious and cooling morning drink. The *juice* is useful in cracked feet. The *powder of the dried bark* is used in cases of anal fistula. Rubbed with honey the powder is applied to aphthous sores of children—(Chakradatta). It is also sprinkled over unhealthy ulcers to promote granulations. The *leaves* are said to be a food for silkworms. The decoction of the leaves and bark is used for tanning leather. This tree yields lac.

365. Ficus Tjakela (*Sans*:—Parkatinj; Suparsva Plaksha. *Hind. and Bom*:—Ram-anjir. *Mah*:—Bassari; Pakri. *Tam*:—Javi. *Tel*:—Jevi. *Can*:—Kari) is a waved leaved fig tree—a sacred tree, but of minor importance. For medicinal uses, see F. Religiosa.

366. FLACOURTIA CATAPHRACTA.

(*N.O.*—FLACOURTIACEAE.)

Sans:—Prachinamalaka. *Tel. Tam. Can.* and *Mal*:—Talispatram. *Arab.*—Zarnal. *Bom.* and *Port*:—Jaggam. *Hind*:—Talispatri; Paniamlak. *Ben*:—Paniyala. *Mah*:—Taleespatra; Panambale; Tambat. *Eng*:—Many spiked Flacortia. *Fr*:—Prunier d'Inde.

Habitat:—Found in Bengal, Nepal to Assam, Chittagong and on the sea coasts of India.

Parts Used:—The fruit, leaves, bark and shoots.

Action:—The bark is astringent; leaves and young shoots are stomachic; the dried leaves are carminative, expectorant, stomachic, tonic and astringent.

Uses :—The *dried leaves* are useful in asthma, bronchitis, phthisis and catarrh of the bladder. The *powdered leaves*, half to one drachm are often given along with the juice of the leaves of Adhatoda Vasika (Malabar Nut tree) and honey ; and a confection called *Talisadya churna* is prepared from the *Talispatri* along with pepper, ginger, bamboo-manna, cardamoms, cinnamon and sugar. The *juice* of the fresh leaves and of their tender stalks is useful in fevers as antiperiodic for infants, the dose being 5 to 10 drops in water or mother's milk ; it is also used in affections of the chest, phthisical cough, dysentery, diarrhoea and indigestion caused during dentition. In Bengal it is given as a tonic in parturition. The *bark in infusion* is a remedy for hoarseness. It is used as a gargle. The *fruit* is edible ; and it is recommended in bilious conditions, to relieve the nausea and to check purging. An *oil* is extracted from the seeds on the Malabar coast.

367. Flacourtia Ramontchi (*Sans*.—Vikarigata; Svadukantaka. *Hind.*—Bilangra ; Kantai. *Ben.*—Tambat ; Bainch. *Uriya.*—Baincho. *Gond.*—Katier. *C. P. & Bom.*—Kaikun ; Pahr Bhekal kakad. *Tel.*—Kanregu. *Kon.*—Japhran. *Eng.*—Mauritius Plum) is a species found from the Punjab eastward to Behar, the Deccan and the Southern Peninsula. The *fruit* is red or brown, dark inky when ripe. The fruits are sweet, appetising and digestive. They are given in jaundice and enlarged spleen. After child-birth among the poor the *seeds* are ground to powder with turmuric and rubbed all over the body to prevent rheumatic pains from exposure to damp winds. The *gum* is administered along with other ingredients in cholera.

368. **Flacourtia Sapida** is a species found in Bengal, the fruit of which is eaten though not palatable. Its thorns are used to open the pustules of the small-pox on the ninth or the tenth day.

369. **Flacourtia Sepiaria** (*Hind.*—Kondai. *Punj.*—Kingaro; Sherwam. *Bom.*—Atruna. *Tel.*—Con‸ew; Kana regu. *Tam*—Sottacla. *Malay.*—Conron Mooli. *Duk.*—Joolay; Karoonday. *C. P.*—Bainch. *Kon.*—Babuli) is a species found throughout Bengal, Western Peninsula and Ceylon. *Infusion of the leaves and root* is said to be an antidote to snake-bite. The *bark* triturated in sesamon oil is a useful *liniment* in gout and rheumatism. The ripe fruit which is pea-shaped is very savoury and is eaten.

370. **Flemingia Nana**; F. Procumbians; F. Congesta are species belonging to Leguminosae (*Ben.* & *Hind.*—Bara-salpan; Bhalai. *Nepal.*—Batwasi. *Bom.*—Dowdola. *Kon*—Damdavlo.) found throughout India. The roots are applied as paste to ulcers and swellings, mainly of the neck—(Rev. A. Campbell.)

371. **Flemingia Strobilifera** (*Oudh.*—Kusrunt. *Santal.*—Simbusak. *Bom.*—Bundar; Kanphuti) is a species found on the lower Himalayan regions from Simla and Kumaon to Assam, Khasia Hills and Chittagong. The roots are used in epilepsy.

372. **Flemingia Tuberosa** (*Mah.*—Birmova. *Kon.*—Birmolo) is a species met with in Concan. The tubers when boiled taste like chestnuts. They are found to contain a yellow resin 1·5 p. c., sugar and gum 25 p.c. asparagin 4·3 p.c. starch 40 p. c., albuminoids 13 p. c. cellulose 12.1 p. c., ash 3.5 p. c., and a trace of tannin.

A decoction (1 in 10) is useful in dysentery and leucorrhoea in doses of 2 to 6 drachms.

373. Foeniculæ Panmorium or Anethum Panmorium (*Sans. & Ben.*—Vanamethi. *Hind.*—Panmuhuri) is a species found in Bengal and is said to possess all the characters and properties of the European fennel fruit. *Vide* the following:—

374. Foeniculam Vulgare or Anethum Foeniculam (*Sans.*—Madhrika; Methica. *Eng.*—Indian sweet fennel. *Bom. Mah. & Hind.*- Badi saunp. *Ben.*—Panmauri; Methi. *Tel.*--Sopu; Jilakurra. *Tam.*—Sombu; Sohikire. *Guz.*--Wariari. *Can.*—Badi sopu) is a species belonging to Umbelliferae, and a native of Europe, but commonly cultivated throughout India. The dried ripe fruit and its essential oil are used as stimulant, aromatic, carminative, diuretic and emmenagogue. The root is regarded as purgative and it is one of the five purgative roots of the ancients in Europe. The 5 roots are:—Fennel, Parsley, Wild Celery, Asparagus, and Butcher's broom (Ruocus aculeatus). The leaves are diuretic, increasing the secretion of urine and perspiration. Fennel *fruit* is used as a condiment and as an aromatic adjunct to medicines. Fennel fruit yields about 3 to 5 p. c., of volatile oil which consists of anethol or anise camphor and variable proportions of a liquid isomeric with oil of turpentine. Anethol is obtainable from fennel in two forms the solid and the liquid; 7·25 p.c. of ash is found in the fruit. The *juice* of the fennel fruits is used to improve eye-sight. *Fennel water* (Aqua Foeniculi) is given in colic and flatulence of children. A *hot infusion* of the fruit is useful in amenorrhoea and in cases where

the lacteal secretion is suppressed. The *oil* is useful in flatulence and checks the griping of purgatives. A *paste* of the seeds or fruits is used in a cooling drink in fevers and in the scalding of urine. Dose of the seeds is ½ drachm; of the oil—5 to 10 minims. The following preparations are popular as home remedies:—(1) Take of F. Vulgare 5, sugar 6, tamarind bark 4 & cloves 2 parts. Mix and make a powder; dose:—10 to 20 grains; used in chronic skin diseases. (2) Take of F. Vulgare 5, *Trikatu* 4. *Sonpha* (another variety of F. Vulgare) 2 and Anise seeds 2 parts. Mix and make a powder; dose:—1 to 3 drachms. Used in feverishness and indigestion with vomiting.

375. **Fumaria Officinalis** or F. Parviflora (*Sans.*—Khsetra parpati; Yavana parpata. *Eng.*—Common fumitory. *Hind.* and *Bom.*—Pithpapda. *Ben.*—Shotara; pitpapra; Ban sulpha. *Pers.* and *Arab.*—Shahterah; Baklat-el-malik. *Cash*:—Shahterah. *Guz.*—Pittapapdo) is a species of the Fumariacea Order found in many parts of India from Indo-Gangetic plain and Nepal down to the Niligiri mountains. The plant is found to contain *Fumaric acid* (isomeric with malic acid) and *fumarine*, a crystalline organic base. A decoction of the plant (1 in 20) is given in doses of 1 to 2 ounces as diaphoretic, diuretic, anthelmintic, aperient and alterative; useful in syphilis, scrofula, leprosy, constipation and dyspepsia due to torpor of the liver or intestines. It is allied in its properties to taraxacum. With black pepper it is given in ague and jaundice, also in skin diseases to purify the blood. The Shafa-ul-Imraz recommends the following local application for leucoderma:—Take of Alum, Potas-

sium Nitras, Armenian Bole (*Bolos*), Fumaria officinalis, Reduced iron, and *Wasma* : equal parts. Mix with vinegar and apply.

Funis Viminalis.—See Ventilago Madraspatana.

376 Galega Purpurea :—(*Sans* :—Puleehashtree; Neelabralakrati; Saraphunkha. *Hind* :—Sarphenka. *Ben*:—Bannilgachh. *Punj* :—Bansa. *Bom* :—Jangli Kulthi. *Mah. and Duk* :—Unhali. *Guz* :—Jhila. *Tel* :—Vempali; Pamparachettu. *Tam* :—Kolluk-kay-velai. *Mal* :—Kazhinnila. *Can* :--Kaggi. *Eng* :—Purple Tephrosia) is a Leguminous species found throughout India. It grows on hard stony ground too difficult to be rooted. The *plant* yielded gum, a trace of albumen and coloring matter, ash containing a trace of manganese; brown resin and chlorophyll and a principle allied to quercetin or quercitrin. It is described as deobstruent and diuretic useful in cough, asthma and tightness of the chest; the *powder of the root* is smoked in *Hookah* or *Chilmi*. The *root* ground into *paste* with turmuric and rice water or cow's milk is applied to scrofulous glands; a powder of the root is also used as a snuff. A decoction of the root with pepper powder added is given in bilious febrile attacks, enlargement and obstruction of the liver, spleen and kidneys. For hepatic dropsy, the root ground in butter-milk is given. The root is also recommended for boils, pimples, abscesses especially carbuncles on the back, as tonic and laxative and as purifier of blood. Its *leaves* in combination with the leaves of Cannabis Indica in the proportion of 2 to 1 respectively or its root ground in curds is a remedy for bleeding piles, and with black-pepper it acts as diuretic

in gonorrhœa. The *root in decoction* is given in dyspepsia and chronic diarrhœa, and as a wash for the mouth. The *root powdered* and mixed with honey is applied to ulcers. The *root-bark* ground and made into a *pill* with black pepper is very beneficial in obstinate colic. A powder of the root taken with water for about a month is said to cure enlarged scrotum. An *infusion of the seeds* is employed as an anthelmintic for children. For itch, scabies etc., the *oil* of the seeds is a specific remedy. For tumours the *ashes* of the plant mixed with the powder of chebulic myrobalan, in equal parts is administered in doses of 1 drachm. The seeds of the white variety are said to be beneficial in the poison of rat; the root is said to be an antidote to snake-bite.

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377. GARCINIA MANGOSTANA.

(*N. O.*—GUTTIFERAE.)

Eng.—The Mangosteen. *Ger.*—Maogostane. *Hind.* & *Ben.*—Mangustin. *Bom. Guz.* & *Mah.*—Mangostin; Mengut. *Mal.*—Mangusta. *Burm.*—Mengkop; Mengut. *Malay.*—Mangusta. *Kon.*—Tavir. *Fr.*—Mangostan.

Habitat.—A native of the Straits Settlements and Singapore cultivated in British Burma, Malayan Peninsula and the Madras Presidency.

Parts Used.—The rind and pulp of the fruit, leaves and bark.

Constituents.—The rind contains *mangostin*, resin and tannin. Mangostin is obtained by boiling the rind in water, and tannin is removed by exhausting by boiling in alcohol and evaporating; the resulting product is mangostin and resin; the resin is precipitated by

redissolving it in alcohol and water, and evaporating the water. It occurs in small yellow scales, tasteless, neutral insoluble in water, but readily soluble in alcohol and ether.

Action:—The rind is a powerful astringent; so also are the bark and young leaves.

Preparations:—(all of the rind):—Extract, dose—3 to 10 grains; Tincture (1 in 10), dose—½ to 1 drachm; Syrup (1 in 5), dose—½ to 1 drachm; Decoction (1 in 10), dose:—4 ounces; Powder, dose—10 to 60 grains; and Juice.

Uses.—The *rind* and *pulp* or entire *dried fruit* are employed as specific remedies in chronic diarrhoea and dysentery, usually in the form of a *syrup*, the drug being boiled in water, strained and the decoction evaporated to a suitable consistence and then sugar added. A *decoction of the rind* with a little cumin and coriander added is also useful in doses of 4 ounces twice a day with or without the addition of 5 to 10 minims of tincture of opium to each dose; sugar or syrup may also be added to it just to make it palatable. Mangosteen *fruit* may also be employed *in powder* given in doses of 10 to 15 grains in port wine, or made into a *paste* with a little sugar; in either form it may be improved by the addition of aromatics, such as cardamom and cinnamon powder 5 to 10 grains to each dose. The fruit is regarded as a remedy in leucorrhoea, gonorrhoea and gleet and is stated to lessen both the irritation and the discharge of matter. A *compound powder* consisting of Mangostin, cubebs, alum and gum acacia, each 10 grains, is a good sedative for gonorrhoea. For *injection* a strong astringent decoction is employed.

The juice is used locally as a gargle in tonsillitis and as a *lotion* in prolapsus ani and vaginae. The following compound powders are very useful remedies :--(1) Take of Mangosteen (the rind of the fruit) 5, Poppy seeds 4, Sugar 6, Pomegranate bark 5 and Rose petals 4 parts ; mix and make a powder ; dose :—10 to 20 grains ; useful in dysentery and chronic diarrhoea in children. (2) Take of Mangosteen 6, Coriander seeds 2, Chebulic myrobalans (Bala haritaki) 2 & Indian sweet fennel seeds 2 parts ; mix and make a powder ; dose :—10 grains with sugar ; useful in chronic dysentery.

378. GARCINIA PICTORIA.
G. Morella; G. Hanburii B. P.

(*N.O.*--CRUSIACEAE.)

Sans :—Tapinja ; Tapichha ; Tamala (juice). *Hind. and Ben* :—Tamal. *Pers* :—Ussareh-i-revanda; Gotagamba. *Eng*:—Mysore Gamboge tree. *Tam*:—Mukki ; Irevel. *Can* :—Jorigehuli mara. *Mal* :—Kurukapuli ; Punarpuli. *Kon* :—Vatamba. *Mah* :—Revachini. *Tel* :—Revalchini-pal (oil).

Habitat :—Malabar coast, Mysore, Bengal, Assam, Siam etc.

Parts Used :—The gum-resin.

Constituents :--Resin 80 p. c., gum 13 p.c., moisture 5. 4 p.c., and dross 1. 2 p.c.

Action :—The gum-resin known as *gamboge* is a powerful hydragogue cathartic and anthelmintic. It acts on the intestinal glands, not on the liver. In large doses it acts as an acrid poison, causes gastro-enteritis and even death.

Uses :—This well-known *gum-resin* forms an ingredient of most remedies employed for the expulsion of the

tapeworm. It is *not* given *alone* as a purgative on account of its tendency to produce vomiting and griping; in combination with other cathartics like aloes and aromatics like cinnamon it operates more favourably; combined with bitartrate of potash it is useful in dropsical affections due to hepatic obstructions; in solution with alkalies it acts as a diuretic, and useful in gouty arthritis; it is also used for cerebral affections such as apoplexy. The dose of the powdered gum as a full purgative is from 2 to 5 grains; as an alterative from half a grain up to six grains; of the compound gamboge *pill* and that of gamboge and scammony the dose is from 5 to 10 grains. For the expulsion of worms, the following is a good formula :—Take of gamboge 10 grains, sulphate of iron 6 grains, lump sugar 20 grains and oil of peppermint 3 drops and water 3 ounces; dose is one ounce to be taken every 4 hours until the desired effect is produced. It should never be given in irritable condition of the stomach and bowels or in cases having a tendency to abortion or uterine haemorrhage. *Externally a paste* of it is used as an application to sprains, bruises and swollen hands and feet. The following *lep* or *ointment* is a useful application :—Take of Extract of Gamboge, Carda-moms, opium, *guggula* (Balsamodendron Mukul), myrrh, surinjana (Daffadila or Meadow saffron) *ambahalad* (Curcu-ma aromatica), each equal parts; mix, add rum ten times in weight to each, make a *Lep* and apply. As an efficient purgative in diseases of the liver and cerebral congestion the following powder is useful :—Take of Gamboge (in bamboo pipes) dr. 1, Chebulic myrobalans dr. $1\frac{1}{2}$, dry ginger $\frac{1}{2}$ dr., and Convolvulus scammonia dr $\frac{1}{2}$; mix and reduce the whole to a fine powder; dose.—15 to 30 grains.

379. GARCINIA PURPUREA; G. Indica.

(*N.O.*—GUTTIFERAE.)

Eng.—Red mango: Mate Mangosteen; (oil) Kokum butter. *Hind.*—Kokam. *Guz.*—and *Mah.*—Birandel Ratamba; Kokambel. *Tam.*—Murgal mara. *Can.*—Murgina-huli-mara. *Mal.*—Punampuli. *Kon.*—Beerunda. *Goa.*—Brindao (fruit-pulp); Amsel (bark) Ratâmbasäl.

Habitat.—This tree grows plentifully in the Konkan Malabar and Canara districts of Western India.

Parts Used.—The concrete oil, seeds, fruit, bark and young leaves.

Constituents.—The concrete oil boiled with caustic soda yields hard soap which is decomposed by sulphuric acid leaving fatty acids (tristearin) as stearic, myristic and oleic. The seeds contain fat 30 p. c. The fruit contains cellulose, an extractive and an insoluble residue.

Action.—Kokum is cholagogue, cooling, demulcent, emollient and antiscorbutic. The bark is astringent, so also are young leaves.

Preparations.—The concrete oil from seeds, syrup of the juice (1 in 5), dose :—½ to 1 dr. Decoction of the bark (1 in 10) dose:—4 to 6 drs. *Amsel* (the acid pulp of the fruit, freed from the seeds, dried in the sun and slightly salted).

Uses.—The seeds yield a concrete oil known as *kokum oil* or kokum butter. This oil or butter is a specific remedy in dysentery and mucous diarrhoea, administered in doses of one tola in a quarter seer of milk three times a day until complete recovery; it is

also useful in phthisis pulmonalis and some scorbutic diseases. It has been recommended as a substitute for cod-liver oil. It is eaten by poor people as a substitute for ghee. *Externally* this oil has a healing property and might be usefully employed as an application to ulcerations, fissures of the lips, hands etc., in such wounds and sores as are accompanied with inflammation. It is also used for preparing ointments, such as nitrate of mercury ointment, suppositories etc. The *young leaves* tied up in a plantain leaf and stewed in hot ashes and rubbed in cold milk are given as a remedy for dysentery. The *juice of the fruit* made into a *syrup* is useful as a cooling drink in dysenteric fever. *Amsel* is used as a substitute for tamarind in the preparation of curries and condiments.

380. **Garcinia Xanthochymus** (*Hind.*—Dampel. *Ben.*—Tamāl. *Assam.*—Tezpur, *Garo.*—Manhala. *Mah.*—Jharambi. *Tel.*—Jwara; Memadi Tamălamu; Chitukamaraku) is a species found in Eastern Bengal, eastern Himalaya from Sikkim to Khassia mountains, eastern and western Peninsula, Circars and Bombay Ghats southwards The fruit is very acid, sweetish when ripe and edible. Its use is similar to Garcinia Indica. In bilious conditions a *sherbet* made with about one ounce of the *Amsul*, with a little rock salt, pepper, ginger, cumin and sugar is administered.

381. **Gardenia Floribunda** (*Sans. & Mah.*—Ananta. *Hind. & Guz.*—Pindithagara. *Tel.*—Thagarapadika) is a beautiful plant of Rubiaceae family found in Konkan with thick and long leaves blossoming in the month of *Shravan*. The *flowers* have a fragrant smell. In the plant there are two varieties.—the red and the white.

For miscarriage and puerperal convulsions, the *root* of the plant rubbed into *paste* with cold water, is applied all over the head, forehead, and on the breasts. The *paste* is also given internally in water. Diet is light rice-conjee water or the water of the *conjee* made by boiling fried-paddy (*Laya*). Rice and *ghee* may be given after the patient is entirely relieved of the symptoms. For head-ache and other painful symptoms of the lying-in-patient, *ananta* root and *bharangi* root (Clerodendron Serratum) both rubbed into a paste with hot water and the same is applied to the painful parts. For snake-bite *ananta* root and *Rheeta* (soap-nut) both ground into water are given internally.

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382. GARDENIA GUMMIFERA; G. Lucida; G. Arborica; G. Resiniferae; G. Campanulata; G. Florida.

(*N O*,—RUBIACEAE.)

Sans.—Hingunadika; Nadi-hingu; Gandharaj G. Florida). *Hind. Ben. Guz. Mah. & Can.*—Dikamali. *Eng.*—Dikamali or Cambi resin. *Tel.*—Karinga; Tella manga. *Tam.*—Kumbai. *C. P.*—Kondamanga.

Habitat.—These trees are common in many parts of India, particularly in the Central and Southern Provinces; Chittagong and Burma.

Parts Used:—The resinous exudation from the fruits.

Constituents:—Dikamali contains two resins:—Gardenin, a crystalline resin of golden yellow colour; another resin soft and of greenish colour.

Action:—Antiperiodic, cathartic, anthelmintic, alterative and antispasmodic. Externally antiseptic and stimulant.

Uses.—A *decoction* of the resinous exudation of G. Gummifera is used in fevers; alone or combined with *Bharangi* (Clerodendron Serratum), the root of G. Florida is used in flatulent dyspepsia and nervous disorders due to dentition. The resin or a *paste* of it is applied to toothache, to foul sores, callous ulcers and to keep off flies from sores. *Internally* it is given to expel round worms. The *fruit* of G. Campanulata is a cathartic and a successful anthelmintic. The *resin* is given in corpulence and to reduce spleen.

Gardenia Uliginosa.—See Randia Uliginosa.

383. **Garuga Pinnata** is a species of Simarubase (*Mah*,—Kusar. *Bom*.—Kurak. *Concan*—Kusimba; Kakad. *Hind*.—Ghogar, *Punj*—Kharpat, *Ben*.—Jrom. *Tel*.—Garuga. *Tam*—Karivembu) found in all parts of India. The *juice of the leaves* mixed with that of Adhatoda vasica and Vitex trifolia and with honey is given in asthma. The *juice of the stem* is dropped into the eye in opacity of the cornea. The *fruit* is pickled and eaten as cooling and stomachic.

384. GAULTHERIA FRAGRANTISSIMA; G Procumbens; G. Leschnaultii or Andromeda Leschnaultii.

(*N.O.*—ERICACEAE.)

Eng.—Indian Wintergreen. *Ben*. *Hind*. & *Java*.—Gandhapuro.

Habitat.—This plant is found in the Nilgiris, and hills in Burma and Ceylon; also from Nepal to Bhutan.

Parts Used.—Volatile oil distilled from the leaves

Constituents.—Volatile oil, arbutin, ericolin, ursone, resin, tannin 6 p. c. and ash 5 p. c. The volatile oil—oleum gaultheria contains iron; it is readily soluble in alcohol. The oil furnishes carbolic acid identical with that obtained from coal tar. It contains methyl salicylate (the source of natural salicylic acid), gaultherilene—a hydro-carbon 10 p. c.

Action.—The *oil* is aromatic, stimulant and carminative, also antiseptic.

Uses.—The *oil* is given with success in acute rheumatism and sciatica in doses of 10 minims gradually increased, in capsules. It may be used as a substitute for the true oil of Wintergreen. The oil is also applied *externally* in *liniments* or *ointments*. It may be used in small quantity for preserving vegetable preparations. It is also used as a pleasant flavouring agent, especially, for dentifrices. Spiritus Gaultheria—a preparation made from the oil (1 in 20), is used for flavouring; dose :—½ to 1 drachm.

385. Gelidium Cartilagineum. or G. Corneum. (*Eng* :—Agar-agar ; Japanese Isinglass. *Fr* :—Mousse-de-Chine. *Japan* :—Thao. *China* :—Yang-tsai. *Hind* :—Chinai ghas) a species belonging to Algae, (sea-weed Family,) is found in the Indian Ocean. The gelatine obtained from it contains gelose—a gelatinous principle containing no nitrogen, sugary matter (mannite), starch and albumen. It is nutrient and demulcent like gracilaria or edible moss and used like it. The nutritious properties are due to gelose. With water it forms a jelly, a very good article of

diet. It is a very good medium for cultivating germs for bacteriological investigations.

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386. GENDARUSSA VULGARIS.

(*N.O* —ACANTHACEAE.)

Sans :—Nila nirgundi ; Krishna nirgunda. *Hind* :—Kalabashimb. *Tel.*—Nallanochili. *Tam* and *Mal.*—Karunochhi. *Can.*—Karinekkigida. *Kon.*—Kalo-negundu. *Bom.* and *Duk.*—Kala adulso ; Shanballi.

Habitat :—Found chiefly in Canara and Travancore.

Parts Used :—Bark, leaves, root and tender stalks.

Action :—The bark is considered a good emetic. The leaves are antiperiodic and alterative.

Uses :—The *leaves* are scattered among clothes to preserve them from insects. The *infusion* of the leaves is given in fevers ; mixed with oil it is an application to glandular swellings; also a *bath* in which the leaves are saturated is very efficacious in fever cases and also in rheumatism. The *juice* of the leaves is administered in coughs of children ; it is also said to be very efficient in the colic of children. The juice mixed with oil is a useful embrocation in glandular swellings of the neck and throat ; mixed with mustard seed it makes an effective emetic. The *leaves* and *tender stalks* put in a bag together with some salt, warmed and applied externally, are useful in diseases of joints, in chronic rheumatism and similar complaints. The *root* boiled in milk is used in chronic indigestion, dysentery, rheumatism and fevers.

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387. GENTIANA KUROOA.
G Chirayita.

(*N.O.*—GENTIANACEAE.)

Sans.—Kiratatikta ; Anaryatikta ; Katuki. *Punj.*—Milakil. *Cash.*—Kiraita. *Eng.*—Himalayan or Indian Gentian ; Chiretta. *Hind.*—Nilkant ; Kamalaphul. *Ben.*—Karu ; Chireta. *Bom,*—Pashanveda. *Guz.*—Kadu chirayata. *Mah.*—Kirayet. *Can.*—Kiriyatu. *Kon.*—Jirate-kaddi. *Tel.*—Nelavemu. *Tam.*—Nilavimbu. *Mal.*—Kiriyat. *Burm.*—Sekhage. *Malay.*—Chrita. *Cing.*—Bincohamba.

Habitat :—This species abounds round Simla, extending to Kashmir and N. W. Himalaya at altitudes of 5 to 10 thousand feet. Numerous other varieties of this drug are found in almost every part of India.

Parts Used :—Root-stalk and the entire dried plant.

Constituents :—It contains the same principles as the European root—gentian bitter, gentianic acid, pectin, and an uncrystallizable sugar. Other varieties contain *chiratin* and *ophelic acid* to which is due the bitterness.

Action :—Bitter tonic, antiperiodic, antibilious, and anthelmintic, in large doses, aperient. In these properties different varieties differ in their strength.

Uses :—The *root* is an efficient substitute for the imported gentian ; the *tincture* and *infusion* closely corresponding to those of the European gentian. It is a favourite remedy in intermittent fevers, acidity and in bilious dyspepsia accompanied by fever ; combined with acids it is said to be specially serviceable in the dyspepsia of gouty persons and in functional inactivity of the liver. A *decoction* of the root with its equal quantity of *sunth* and *dikamali*, or an infusion of chiretta in cold water

with the addition of 4 grs., each of camphor and *shilajit* and ½ tola of honey are popular remedies in all cases of debility after fevers, in indigestion, loss of appetite etc. It is also used in catarrhs, syphilis, leprosy and other skin diseases. In the form of infusion mixed with a little powder of *pipli* (long pepper) it is useful in fevers accompanied by coughs and difficulty of breathing. A *powder* of the root mixed with honey is given in hiccup and to stop vomiting. The following confection is said to be useful in malaria and is said to reduce enlargement of spleen and liver after its long continued use, in doses of ¼ to ½ tola twice a day.—It is made of Gentian root and black pepper each 1 drachm, Aplotaxis auriculata, Cinnamomum tamala, Valerianæ radix and Rhei redix each 7 *mishals*, and honey 11 *palams*. Powder all the ingredients and mix them with honey which is previously boiled and cooled. The following Ayurvedic preparations are also in popular use among Hindu physicians :—(1) A decoction made of equal parts of Chiretta, *gulancha*, raisins, emblic myrobalan and zedoary root is useful in fevers caused by *Vata-pitta*. (2) A compound powder called *Sudarsana churna* prepared by taking equal parts of 54 different substances and of chiretta equal to half the weight of all the other ingredients and mixing them together. It is largely prescribed in chronic febrile diseases. (3) *Kiratadi taila* or oil of chiretta :—this is made by mixing together 4 seers each of concentrated decoction of chiretta, mustard oil, *Kanjika* and whey and two tolas each of 24 other substances in the form of a paste and boiling them together to the consistence of a thick oil. This oil is used for

rubbing on the body in chronic fever with emaciation and anaemia. (4) *Bhoonimbadhi Churnam*, which is made of Chiretta, *Katuki* (Picrorrhiza Kuroos), *trikatu*, *Musta* (Cyperus rotundus) seeds of Holarrhena antidysenterica, *chitraka* (Plumbago zeylanica) and bark of Holarrhena antidysenterica; used in dyspepsia, chronic diarrhoea, fevers, dysentery and worms. (5) *Panchathikthaka* powder and decoction which consist of equal parts of chiretta Cocculus cordifolia, Oldenlandia herbacea (*parpataka*), Clerodendron Serratum (*Bharangi*), tubers of Cyperus rotundus and dry ginger; dose:—one drachm of the powder in decoction twice a day. (6) *Panchathikthaka panakam* which is prepared by boiling equal parts of Chiretta, *Katukrohini* (Picrorrhiza kurooa). *parpataka*, tubers of Cyperus rotundus and Cocculus cordifolia, in 16 parts of water, till reduced to its quarter volume and then adding sugar equal to the weight of the powders, to convert it into syrup; dose:— ½ ounce twice or thrice a day. given in conjunction with *Ananda Bhairavi* or *Jwaramurari* pills, in malarial fever with enlarged spleen.

The following are simple home remedies containing Chiretta and useful in various common ailments:—(1) Take of one ounce of Chiretta and one drachm each of cloves and cinnamon and infuse them in one pint of boiling water for six hours and strain; dose-two ounces before food twice daily as a tonic. (2) Take of one tola each of smashed chiretta and coriander seeds, boil them together in 16 ounces of water till reduced to 4 ounces; dose—2 ounces twice daily with a few drops of honey, used in cases of torpid liver. (3) Take two ounces of the bruised stems of chiretta, add them to a bottle of sherry and let

it stand for a week ; dose—2 ounces once or twice daily one hour before meals taken for debility after fevers, indigestion, loss of appetite etc. (4) A compound tincture of chiretta is made thus:—Take of 1½ ounces of bruised chiretta, ¾ ounce of bruised orange peel and ¼ ounce of cardamom seeds freed from the pericarps and bruised; macerate all these together in 1 pint of Proof Spirit for seven days in a closed vessel, with occasional agitation; then strain, press, filter, and add sufficient proof spirit to make one pint; dose—one to two drachms in water. An excellent tonic and also a valuable adjunct to other tonics.

388. Geranium Nepalense. G. Ocellatum & G. Robertianum, all known as *Bhand* are the species of Geraniaceae found in temperate Himalaya. They all possess astringent and diuretic properties. The whole plant is used medicinally.

389. Geranium Wallichianum is another species of Geraniaceae (*Afghan & Pushtu*—Mamiran. *Arab.*—Ibrat-ur-raae. *N. W. P.*—Liljabri. *Cash.*—Mamiran; Kao-ashud. *Eng.*—Shepherd's needle) found in temperate Himalaya from Nepal to Murree and Cashmere. The part used in medicine of this plant is the rhizome. Its constituents are tannin 12 to 27 p. c., gallic acid, red colouring matter, starch, pectin and sugar. It is a powerful and efficient astringent. It is given in infusion or decoction with hydrastine in chronic diarrhoea and dysentery, passive haemorrhages, in relaxed condition of the mucous membranes as gonorrhoea, gleet, leucorrhoea, diabetes, cholera etc Locally it is used as a gargle in

sorethroat and ulceration of the mouth, as an injection to relaxed vagina, uvula, rectum etc.

390. Gerish Elatum & G. Urbanum are two allied species of genus Rosaceae met with in temperate Himalayas and known as *gunglu junglic* in Persian and *goglemool* in Cashmere are noted for their medicinal virtues, which are residing in their roots. The roots are astringent, tonic and antispetic "but undeservingly neglected in modern practice".—(British Flora Medica).

391. Gisekia Pharnaceoides, belonging to genus Ficoideae (*Sans.*—Valuka. *Hind & Duk.*—Baluka-sag. *Ben.*—Baluka. *Mah.*—Valuchi-bhaji. *Tam.*—Manal-kirae *Tel.*—Esaka dantikurra. *Cing*—Attirillpala) is found in Punjab, Sind, South Deccan and Ceylon. The seeds contain tannin-like principles provisionally named *Alpha* Gisekia and *Beta* Gisekia, both having probably anthel-mintic properties. A draught made by grinding the plant with its leaves, stalks etc, in a mortar with sufficient water is adminis-tered in cases of taenia. The dose is about two ounces. This is given in the morning on an empty stomach. It may be repeated three times at intervals of four days. The plant has aperient and anthelmintic properties.

392. GLORIOSA SUPERBA.

(*N.O.*—LILIACEAE.)

Sans.—Sukra pushpika; Garbhagatini. Langlika; Agni-sikka; Kalikari. *Eng.*—Superb lily. *Hind.*—Carihari, *Ben.*—Bishalanguti. *Guz.*—Khadyanag. *Mah.*—Nagakaria; Kari-anag. *Tel.*—Adavinabhi; Agnishikha; Langali. *Tam.*—Kalaippaikizhangu; Kartikka-kilangu. *Can.*—Nangulika. *Mal.*—Manthori-kizhangu; Macttoennui; Kandal. *Kon.*—Vagananakta. *Duk.*—Natka-bachnag.

Habitat :—This elegant climbing plant is common in Bengal and in low jungles throughout India.

Parts Used :—Tubers.

Constituents :—Two resins, tannin and a bitter principle *superbine* allied to the bitter principle of squill. A white farinaceous starch is obtained from the root by repeated washing, and grindings throwing away the supernatent liquid and washing the residue carefully for half a dozen times.

Action :—Tonic, antiperiodic, alterative and purgative. According to the Nighantas the root is purgative, hot, light and pungent; it increases the secretion of bile.

Uses :—The *tuberous root* is one of the 7 minor poisons of Sanskrit writers. It is believed to be a specific against snake-bites and scorpion stings and also used in the form of *paste* as an application in parasitic skin diseases. The root in thin slices soaked in salted butter-milk for 4 to 5 days by night and dried by day for 4 to 5 days is said to be freed from its poisonous properties. So prepared and preserved, a piece or two given internally for cobra bite is said to be an effectual antidote against cobra-poison. The white powder obtained by repeated washings and grindings is given in gonorrhoea up to 12 grains mixed with honey. The dose of the tuberous root (starch) is 5 to 10 grains. It is generally employed as an anthelmintic for cattle. In large doses it might be poisonous. The root powdered and reduced to a paste is applied to the navel and supra-pubic region with the object of promoting labour pains. For the same purpose it is said that the paste may be applied to the palms and soles also. In cases of retained placenta the paste of the

root is applied to the palms and soles while powdered nigella seeds and longpepper are given internally with wine. *Internally* the starch or the root is said to be useful when given in leprosy, piles, colic, and to expel intestinal worms. Rubbed with *Chitraka* bark in cow's urine it is applied to painful piles.

393. **Glossocardia Bosvallea** or G. Linearifolia is a species of Compositae (*Sans.* Charak; Renu. *Eng.*—Rock anethum. *Arab.*—Shahtaraz. *Duk., Mah.* & *Hind,* Phattar-suva, *Guz.*—Davanapapda. *Can.* & *Tel.*—Parpataka) found in Central India and Deccan. The root of the plant contains an essential oil; the leaves, stems and flowers contain a bitter alkaloid. The whole plant is used medicinally in the form of a confection, as an emmenagogue, in cases of suppressed menses, in doses of 1 to 4 drachms. It is said to be useful also in fevers caused by *pitta* and vitiated *vayu.*

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394. GLYCYRRHIZA GLABRA; G. Glandulifera.

(*N.O.*—LEGUMINOSAE.)

Sans.—Yashti madhu; Madhuka. *Ben.*—Yashto-madhu. *Eng.*—Sweetwood; Liquorice. *Fr.*—Bois doux. *Ger.*—Sussholz. *Hind.*—Mithilakdi; Kubas susa (extract in black sticks). *Guz.* & *Mah.*—Jashtimadh. *Tel.*—Yashti-madhukam. *Tam.*—Ati-madhuram. *Can.*—Jestamaddu. *Arab.*—Aslussi-esa (root); Rubussusa (extract). *Pers.*—Ausareha mahaka; Bikhe mahaka.

Habitat—Arabia, Persia, Afghanisthan and Turkey; but the root is cultivated in the Punjab, Sindh and

Peshawar. The liquorice root is found in all the bazaars of India.

Parts Used—The peeled root.

Constituents.—The root contains Glycyrrhizin, a yellow amorphous powder, asparagin, sugar, starch, acid resin, gum, mucilage, phosphoric, sulphuric and malic acids, calcium and magnesium salts. The bark contains a small quantity of tannin.

Action.—Cooling, demulcent, expectorant, diuretic emmenagogue and gentle laxative.

Preparations.—Infusion and Decoction, dose—2 to 4 ounces; Extract, Liquid Extract, dose—½ to 1 drachm; Compound powder 1 to 2 drachms; Compound Pill, Confection and Lozenge.

Uses.—The *root* in *infusion, decoction, extract* or *lozenge* is useful in inflammatory affection or irritable conditions of the bronchial tubes, bowels and urinary passages as cough, hoarseness, sorethroat, asthma, dysuria, ardor urinae etc., it is much used as an adjunct in pharmaceutical preparations as compound decoction and tincture of aloes, compound mixture and confection of senna etc.; also used for flavouring infusions, lozenges, oils and *ghritas*. The *liquid extract* is specially useful in disguising the taste of bitter or acrid and nauseous medicines and to sweeten tobacco. The inspissated juice sold in the bazaars in the form of black pencils is an ingredient of various laxative powders, confections, lozenges etc. The root mixed with lime juice and linseed makes a homely valuable remedy for coughs and colds. The root is one of the ingredients of several cooling applications, along with sandal wood, madder, andropogon muricatus etc. The

compound powder which consists of liquorice root and fennel fruit each 1 part, senna 2 parts, sublimed sulphur 6 parts and refined sugar all powdered and mixed together, is useful as a gentle laxative, given to delicate patients. The following *compound powder* is said to be useful in controlling the pyrexia of phthisis:—Take of liquorice root, quince seed (Cydonia Vulgaris), and Andropogon muricatus (*valo*) each 7 *mashas* (*masha*= 16 grains), camphor, saffron, cinnamon bark (*darchini*), seeds of *Khayren* (Cassia fistula), seeds of *Kahu* (Lettuce seeds), sandal, *gulab* (Rose petals) and seeds of water-melon (*Turbuz*) each 3 *mashas* and *Katira* (gum tragacanth) 1½ *mashas*; powder them and mix together; dose—4 to 6 *mashas* (about 1 to 1½ drachms). A decoction made of the liquorice root, coriander seeds, Cyperus rotundus and *gulancha* in equal quantities is a useful remedy for bilious fevers. A *confection* called *Majoonai Sual*, is a very useful expectorant in bronchitis, also useful in malaria and said to reduce enlarged spleen, by long continued use. It is made thus.—Take of 8 tolas of liquorice root, 48 tolas of preserved grapes, 32 tolas of white sugar, and 2 tolas each of chebulic and beleric myrobalans, cloves, nutmeg, *Kachura* (round zedoary) and cinnamon (*darchini*) and half drachm each of *badian* (anisi fruit), emblic myrobalan and anethum sowa; make a decoction of the liquorice root, powder all the other ingredients and make confection with sugar and preserved grapes; dose is ¼ to 1 tola twice a day. A mixture containing extracted juice of liquorice roots and extracted juice of Hermaphrodite amaranth taken with honey is said to be a sovereign cure for all sorts of leucorrhoea and other

uterine complaints. Lozenges made up of extract of liquorice root 3 parts, and 1 part each of cubebs, gum arabic, and extract of conium, and 4½ parts of sugar, all powdered, mixed together and made into troches or pestils are useful in bronchial affections. Compound pills made up of extract liquorice 10 parts, acacia gum 8, black pepper 6, pellitory root 4, *gulancha* 6, saffron 12 and sugar 10 parts are useful in cough and asthma; and pills of 5 grains each, composed of equal parts of liquorice, camphor, asafoetida and gum *babul* (gum acacia) are useful for influenza.

395. Glycine Labialis *Sans.*—Māshparni; krishna-vrinta; kamboji; hayapuchika; Mansa masha; Sinhamukhi; Swada masha; mahasaha) is a Leguminous species found in plains throughout India, Burma, Ceylon etc. In the Nighantas it is described to be bitter, cooling, astringent and dry producing semen, strength and blood, and curing consumption and fever and disorders of *Vayu*, *pitta*, and of blood.

396. Glycine Soja & G. Hispida are species (*Eng*—Soya bean. *Hind.*—Bhatwan. *Ben.*—Gari kulay., *Kumaon.*—Bhut. *Eastern Terai.*—Khajuwa), met with on the tropical Himalaya from Kumaon to Sikkim and Khassia and Naga Hills. A decoction of the root is said to possess astringent properties.

397. GMELINA ARBOREA

(*N.O.*—VERBENACEAE)

Sans.—Gambhari : Krishna Vrinlaka; Shriparni; Kasmari. *Hind.*—Gambhara. *Ben.*—Gamari. *Guz.*—Shewan. *Mah.*—Shivanasal. *Tel.*—Gumar tek; Peddagomru. *Tam.*—Gummadu teku. *Can.*—Kashmiri-mara: Shivanni-gida. *Mal.*—Kumbula.

Habitat.—The lower Himalaya, the Nilgiris and the East and West Coasts of India.

Parts Used. The root, bark and fruit.

Constituents.—The root contains a yellow viscid oil, resin, an alkaloid, a trace of benzoic acid and ash free from Manganese. The fruit contains butyric and tartaric acids, an alkaloid, saccharine matter, resin and a trace of tannin.

Action.—Demulcent, stomachic tonic, refrigerant and laxative. The tender leaves are demulcent. The fruit is sweetish bitter and cooling.

Uses.—The *root* is an ingredient of the *dasamula* of the Vaidyans. It is used in the form of *infusion* or *decoction* in fever, in indigestion anasarca etc. With liquorice, sugar and honey added it is given in cases of scanty secretion of milk in women to increase the secretion. The *juice of tender leaves* added to cow's milk and sweetened with sugar-candy is given with much benefit in gonorrhoea and catarrh of the bladder. An *infusion* of the tender leaves is also useful. The leaves ground into *paste* with water is applied to the forehead for headache in fevers. To prevent abortions in the early stage of pregnancy a *powder of the bark* of black gingelly seeds, *manjista* and *satavari* is given in milk. The *fruit* forms an ingredient of several cooling and refrigerant decoctions, *e. g.*, (1) Take of the fruits of Gmelina Arborea, Grewia Asiatica *(parushaka)*, liquorice root, red sandal wood and root of Andropogon muricatus (*ushira*), equal parts in all two tolas, water 32 tolas, and boil till reduced to one- half. This decoction is used as a drink in bilious fever—(Chakradatta). (2) Take of the fruit of Gmelina

arborea 10, Raisins 10, Indian Sarsaparilla 6, Delphinium saniculaefolium 5, and Cocculus cordifolius 8 parts. Mix and make a decoction. When ready add jaggary 2 parts; dose.—1 to 1½ ozs. This is used in remittent fever.

398. **Gmelina Asiatica** or G. Parviflora (*Sans.*—Biddarie. *Tam.*—Nilak-kimnizh. *Tel.*—Challagumudu; Shirigumudu. *Can.*—Kumatha. *Cing.*—Gatta-demata. *Kon.*—Sivni) is a species met with in Travancore and Coromandal coast. The *root* is demulcent and mucilaginous; so also are the leaves and young shoots. Cold water impregnated with the thick viscid mucilage of the leaves and young shoots is given in the treatment of gonorrhoea, dysuria and catarrh of the bladder. It allays ardor urinae.

Gossypium Arboreum (*Eng.*—Silk Cotton tree. *Fr.*—Cotonnier arborescent) is a tree indigenous to Bengal—See Bombax Malabaricum.

Gossypium Herbaceum (*Fr.*—Cotonnier Herbace. *Ger.*—Baum wollpflanze.)—See Gossypium Indicum.

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399. GOSSYPIUM INDICUM; G. Herbaceum.

(*N.O.*—MALVACEAE.)

Sans.—Anagnika; Karpas. *Fr.*—Cottonier de l'Inde. *Ger.*—Indische Baum Wollenstaude. *Eng.*—Indian Cotton plant.—*Hind.*—Kàpás. *Guz.*—Vonâ; Rui. *Ben.*—Karpas; Tula. *Burm.*—Wah. *Duk.* *Mah.* & *Kon.*—Kapus. *Tel.*—Patti. *Tam*:—Parthi. *Can.*—Hatti. *Mal.*—Karuparutti. *Mah.*—Rankapus (cultivated in fields).

Habitat :—This is extensively cultivated in India in various species in fields, hillocks etc.

Parts Used :— The bark, seeds, leaves, flowers and root-bark.

Constituents :—The bark contains starch and a *chromogen* gradually changing to bright brownish red. It contains glucose, a yellow resin, a fixed oil, a little tannin and 6 p. c., of ash. The seeds contain an oil 10 to 29 p. c., albuminoids, and other nitrogenous substances from 18 to 25 p. c., and lignin from 15 to 25 p. c. The chief constituent of root-bark is a yellow or colorless acid resin, dihydroxybenzoic acid, & phenols. The flowers contain a colouring matter, a glucoside named "gossypetin," which when fused with caustic potash, decomposes into two crystalline products :—phloroglucinol and protocatechuic acid. When the phenolic constituents of cotton-seed oil are purified by repeated fractionation from acetic acid solution, a crystalline product named *gossypol* is obtained which crystallizes in glistening golden scales, soluble in alcohol, benzene, chloroform, ether, acetone or acetic acid, sulphuric acid and alkalies, but not in water.

Action:—The seeds are demulcent, laxative, expectorant and aphrodisiac (nervine tonic); The root and bark are emmenagogue and galactagogue.

Uses.—The *seeds* are given as a nervine tonic in headache and brain affections; deprived of their outer coat, they are powdered and given in milk in doses of two drachms. They are used in the preparation of a fine white *powder—lactagol* which is given in ½ to 1 drachm doses to increase the secretion of milk. The seeds in the form of *emulsion* or tea (concentrated decoction) are given in dysentery; in America it is successfully given

as a popular remedy in cases of intermittent fever; a teacupful of it is given an hour or two before the expected return of chill. The *seeds* are also said to be useful in epilepsy and as an antidote to snake poison. In India cotton seeds and in the United States of America cotton-bark (a fluid extract of the bark) is used to produce abortion. Pounded and mixed with ginger and water they are applied as a *paste* to orchitis; as *poultice* they make a good application to burns and *scalds*; the *oil* expressed from the seeds and known as the *cotton seed oil* is a good application to the head to cool the brain and to cure headaches. It makes a good *liniment* in rheumatic affections; it is useful in clearing the skin of spots and freckles. *Fresh juice of the leaves* is useful in dysentery; two to three tolas of it is given in cow's milk in piles, strangury and gravel. A *tea* or *infusion* of young leaves is recommended in looseness of bowels and diarrhoea; it is used for preparing a *vapour bath* for the anus in cases of tenesmus; young *leaves and roots boiled in water* are used as a hip-bath in uterine colic. The *leaves externally* in the form of poultice hasten the maturation of boils, and with oil they are applied as a *plaster* to gouty joints. Ground with mustard and made into a *Lep*, it is applied to scorpion stings. The *root in infusion* or *decoction* in doses of 2 to 4 ounces thrice daily is useful in dysmenorrhoea, and suppression of the menses produced by cold; similarly the *root-bark* also is used in uterine disorders either as decoction or fluid extract. The root of gossypium and the root of sugarcane both ground together in *conjee* are given to increase secretion of milk. The root-powder mixed with rice flour and made into cakes and

eaten daily is said to relieve scrofulous taint. In sores and swellings of the breast the root and *Dudhi bhopla* (Lagenaria vulgaris) both ground together into paste are applied as a *Lep* to the inflamed parts. In Gynæcological practice, gossypium is far better and safer than ergot since rapidity of action is not so necessary, and since it does not produce any unpleasant secondary or after-effects, following a prolonged course of ergot subcutaneously or per os. In severe cases of dysmenorrhoea, chlorosis and suppression of the menses due to cold, a strong decoction of bark may be used in doses of two ounces every twenty to thirty minutes or the fluid extract or tincture in doses of ½ to 1 drachm. The following decoction is recommended in ILAJ-UL-GURBA for amenorrhoea:—Take of Cotton bark 2 *chataks* and water 1 *seer* and decoct till the whole is reduced to 4 *chataks* and then mix sugar. A *syrup of the flowers* is useful in hypochondriasis on account of its stimulating and exhilarating effect. A *poultice* made of them is applied to burns and scalds. A *decoction* of the flowers and seeds is an antidote to datura poisoning. The young fruit is given to check dysentery.

The cotton as protective is used locally to exclude air from ulcers, burns etc., it is used to protect parts from cold as in rheumatic joints; to protect mouth and nose in injurious trades and as a filter to plug the orifices of bottles etc. In bacteriology it is used to exclude micro-organisms since cotton wool acts like a filterer of atmospheric germs preventing their access to wounds, ulcers etc, It may be medicated by being sprinkled over with carbolic. salicylic or boric acid. Cotton is used in the preparation of *gun cotton* or *pyroxylin* which is made by dipping cotton

into a mixture of equal parts of nitric and sulphuric acids and washing freely with water and drying. Pyroxylin or gun-cotton is in turn the source of *collodion*. Collodion is a colorless liquid of the consistence of syrup with an odour of ether and highly inflammable. It dries quickly on exposure to the air leaving a thin transparent film which contracts on drying and is insoluble in water or alcohol. It is prepared by adding 1 part of pyroxylin to a mixture of 36 parts of ether and 12 of alcohol and decanting the clear fluid after a few days and preserving in a stoppered bottle. Burnt cotton is used in applying to sores and wounds to promote healing. For epistaxis and bleeding from the gums the smoke of the old cotton wool is sniffed up and then 2 tolas of leaf juice mixed up with 1 tola of sugar-candy is taken internally.

400. Gossypium Religiosum (*Fr.*—Cotonnier des nonnes. *Ger*.—Chinesische Baumwollenstaude.) is a perennial herb cultivated near the temples or in the court yards, indigenous to Bengal and southern China. In Bengal sacred threads are made out of its wool. The unripe capsule with opium and nutmeg inserted in its interior and incinerated is used in dysentery with good results.

401. Gracilaria Lichenoides belonging to Algae or Sea weed family (*Eng.*—Edible moss; seaweeds; Ceylon moss. *Bom.*—Chinai gas. *Duk.*— Darya-ki-gas or pachi. *Tel.*—Samudupu-pachi. *Cing.*—Agar-agar) occurs in the back water of Ceylon and Indian ocean. The dried plant is used medicinally. It contains vegetable jelly (40 to 80 p.c.), albumen, iodine, true starch, ligneous matter, mucilage and salts as sulphate and chloride of soda, sulphate and phosphate of lime, wax and iron

The dried plant (moss) is reduced to a fine powder. The powder boiled with 100 times the quantity of water makes a jelly-like solution on cooling, and it may be used flavoured with lemon peel or *tejpatra* or cinnamon and sugar and a little wine; it is given as a restorative to invalids. It contains a large quantity of pectin or vegetable jelly. A decoction (1 in 40) made of it is also useful given as emollient and demulcent in doses of 1 to 2 ounces in pectoral affections, in dysentery and diarrhoea; a jelly made of it is given in leucorrhoea and profuse menstrual flow and irritation of the urinary passages. It contains iodine and hence it is useful in goitre, scrofula etc. It is a good substitute for isinglass.

402. **Grangea Maderaspatan** or G. Adansonia or Artemesia Maderaspatan (*Eng.*—Madras wormwood. *Ben.*—Namuti. *Mah.* & *Tam.*—Mashipatri. *Tel.*—Mastarusavi. *Mal.*—Nelampata. *Can.*—Douna. *Kon.*—Modagorii) belonging to Compositae is found throughout India, particularly Bengal. The plant is stomachic and uterine stimulant in action. An *infusion of the leaves* with ginger and sugar added is used in dyspepsia, hysteria and obstructed menses. Externally it is useful as an anodyne and antiseptic fomentation to inflamed and painful parts. As an antiseptic application the powdered leaves are applied to wounds and ulcers. The *juice* of the fresh leaves is instilled into the ear for earache.

Gratiola Monniera—See Herpestis Monniera.

Gravia Salvifolia—See Alangium Decapetalum.

403. **Grewia Asiatica** or G. Elastica, *var.* G. Vestita is a species of the genus Tiliaceae (*Sans.*—Dhar-

mana; Purusha. *Hind. Sind. & Guz*—Phalsa. *Hind.*—Dhamani; Pharsa. *Ben.*—Shakri. *Tel*—Phutiki. *Punj.*—Phalna; Pharua. *Sant.*—Jangolat *Tam.*—Tadachit) found throughout India. The small acid fruit of this tree is one of the *phala-traya* or fruit-triad of Sanskrit writers, and possesses astringent and cooling properties; it is said to be an alleviative of *Vata* and *Kufa*. A *sherbat* is prepared from it and a *spirit* is also distilled after fermentation. The *bark* contains a mucilaginous *juice* and its *infusion* is used as a demulcent. The *leaves* and the buds are used as an application to pustular eruptions. The *root-bark* is used for rheumatism by the Santals.

404. Grewia Polygania & G. Lancifolia are the species of the same Genus. *Hind*—Kukur bicha. *Santal.*—Setakata; Seta andir. *Bom. & Kon.*—Gowli) is met with in North Western India and along the Himalaya as far as Nepal, also in the Konkan. A *decoction* or strong *infusion of leaves* is a remedy for the cure of dysentery in one-ounce doses. The fruit is also employed by the Santals in diarrhoea and dysentery. The *root* pounded is also prescribed for the same diseases. The root pounded into a *paste* with water is used as an application to hasten suppuration and as a dressing for wounds. The paste dries and forms a hard coating; thus effectually excluding air from the raw surface.

405. Grewia Scabrophylla (*Mah.*— Khatkhati Pandhari; Dhaman. *Can.*—Darsuk) is found in tropical Himalaya, from Garhwal to Sikkim, from Gujrat to Behar, from Jamna eastward to Assam, and Chittagong to Pegu; Common in Dun and Saharanpur forests. The *roots* are

used as a substitute for Althaea by the Goanese. In the Concan it is given as a remedy for leprosy. The plant appears to be mucilaginous like most of the gums.

406. **Grewia Tiliæfolia** (*Sans.*— Dharmana; Dhanurvriksha: *Hind. & Ben.*—Pharsa; Dhamani. *Bom. & Kon.*—Dheman; Karkani. *Sant.*—Olat. *Tam.*—Thada- *Tel.*—Charachi; Tharrah. *Can.*—Thadsal; Butali) is found in hot dry forests throughout Western India, Burma, Ceylon etc. The *bark* of this tree after removal of the tuber is rubbed down with water and the thick mucilage strained from it is given in 5 tola doses with 2 tolas of the flour of Panicum maliaceum as a remedy for dysentery. Externally the *bark* is employed to remove the irritation from cow-itch.

407. **Grewia Villosa** (*Punj.*—Jalidar kaskusri; Tamthar. *Pushtu.*— Inzarra Pushtu wanne. *Ajmere.*—Dhoban. *Mah.*— Kharmati. *Guz.*— Pade khado. *Cutch.*— Luskanu jhad) grows in Western and Southern India extending from Punjab and Sind to Travancore. The *juice of fresh bark* is used with sugar and water for gonorrhoea and urinary complaints attended with irritability of the bladder. The *root* is employed in diarrhœa. The sweet acid fruit is eaten by the poor.

Grislea Tomentosa— See Woodfordia Floribunda.

408. **Guazuma Tomentosa** is a species of Sterculiaceæ (*Ben.*— Nipal tunth. *Duk.*— Bandoq-ke-jhad: *Tam*—Tainpuchli. *Tel.*—Udrik-chettu. *Can.*—Rudrakshi) generally cultivated in the warmer parts of India and Ceylon. *Infusion of the old bark* is esteemed as a sudorific and useful in diseases of the skin and the chest. It is also a tonic and demulcent and used with benefit in cases

where Calumba and Gentian are indicated. The inner bark is esteemed as a remedy for elephantiasis.

409. **Gudumal**—As regards the plant known by this name in Northern India Dr. M. C. Koman says in the Report on Indigenous Drugs 1921, as follows:-" A *decoction of the leaves* was given to a patient suffering from diabetes mellitus for nearly two weeks; the quantity of sugar *diminished from 21.9 to 8·75 grain* per ounce, but as at the same time the patient was on an anti-diabetic diet, it could not be definitely said whether the improvement was due to the drug or the diet. I have not as yet succeeded in finding the botanical and vernacular names and the natural order of the plant."

Guilandina Bonducella—See Caesalpinia Bonducella.

410. **Guizotia Abyssynica** or G. Oleifera is a species of Compositae (*Eng:*—Niger seed; Kersani seed, *Hind:* Kala-till. *Ben:*- Ram til; Surguja. *Seoni;*- Jagni, *Mah.* & *Guz:*-Kharsani; Kesani. *Tel:*—Vaiesulu; Ulisi. *Tam:*—Kattellu; Uchellu. *Can:*- Kadellu; Hutch-ellu) and an African herb cultivated in many parts of India, chiefy Bengal, Bombay and the Deccan. The *seeds* contain 39 p. c. of oil, besides albuminoids, carbohydrates, woody fibre and soluble mineral matter. The *oil* expressed from the seeds used in cooking as a substitute for sessamum or olive oils and and also for linseed oil. It is employed for rubbing over the painful parts in rheumatism.

411. **Gymnema Aurantiacum** (*Sans.*—Meda) is a twining leafy Asclepiadaceous species growing in Southern India, Ceylon, Burma and Singapore. Its tuber which is milky, white and globular is eaten as a vegetable and used medicinally as a restorative.

412. **Gymnema Balsamicum.**—(*Sans.*—Kakoli) is an aromatic, stimulant and vulnerary species growing in Malabar, Ceylon etc.

413. **Gymnema Lactiferum.**—(*Sans.*—Ksira-kakoli. *Eng.*—Ceylon cow-plant) is a species growing in Ceylon furnishing a white pleasant *juice*, which is a substitute for cow's milk. The leaves are eaten as a vegetable.

Gymnema Spartum—See Leptadenia Spartum.

414. GYMNEMA SYLVESTRE or Asclepias Geminata.

(*N. O.*— Asclepiadeae.)

Sans.—Sarpadarushtrika; Meshasringi. *Hind. & Ben.*—Chhota-dudhilata, Mera-singi. *Guz. & Mah.*—Kavali. *Tel.*—Boda-patra, Putla-podra. *Tam.*—Shiru kurunja. *Bom.*—Wakandi. *Duk.*—Parpatrah.

Habitat.— A climbing plant common in Central & Southern India and on the Western Ghauts and in the Goa territory.

Parts Used.—The root, leaves and the acid principle.

Constituents.—The sundried leaves contain resin; a bitter neutral principle, albuminous and coloring matters, calcium oxalate, pararabin, glucose, carbohydrates, tartaric acid, gymnemic acid 6 p. c., cellulose and ash. The *bark* contains starch and a large amount of Calcium salts, and other crystalline concretions. Gymnemic acid resembles chrysophanic acid, forms insoluble salts with alkaloids.

Action.—Astringent, stomachic tonic and refrigerant.

Uses.— The *root* has long been reputed as a remedy for snake-bite, its *powder* being dusted upon the wound or made into a *paste* with water and applied and a decoction given internally. The *leaves* when chewed deaden the sense of taste of sweets and of the bitterness of bitter substances such as quinine. This effect lasts for about 24 hours; it does not affect pungent, saline things, astringents and acids. A *docoction* (1 in 10) is given in doses of ½ to 1 ounce in fever and cough. It is said to have properties similar to Ipecac. The *leaves* triturated and mixed with castor oil are applied to swollen glands and to enlargement of internal viscera as the liver and spleen.

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415. GYNANDROPSIS PENTAPHYLLA.

(*N. O.*—CAPPARIDEAE.)

Sans.—Arkapushpika ; Suryavarta. *Eng.*—Caravalla seeds, *Hind.*—Hurhur. *Ben*—Arkahuli ; Sada hurhuria. *Mah.*—Hulhul ; Mabli Kalvana. *Tel.*—Vaminta ; Velakura. *Tam.*—Velai ; Naivela. *Can.*—Shrikala *Mal.*—Karvela. *Sind.*—Bighara *Bom.*—Kanphuti ; Mhoti tilavana. *Kon.*—Shirkal.

Habitat:—This annual plant, common on cultivated ground, is met with in the warmer parts of India.

Parts Used:—The seeds, leaves and root.

Constituents.—The plant contains an acrid fixed oil, and a brown soft resin ; seeds when crushed develop an acrid volatile oil similar in properties to garlic or mustard oil.

Action.—Seeds are antispasmodic, sudorific, anthelmintic and carminative. Bruised leaves are rubefacient vesicant.

Uses.—The small kidney-shaped black seeds resemble those of Cleome Viscosa. The plant has an odour much resembling asafoetida but comparatively delicate. The *bruised leaves* applied produce copious exudation and afford the relief obtained from a blister, without its inconveniences. The *powdered seeds*, in doses of 30 grains to one drachm, are administered internally, for the expulsion of round worms, combined with sugar, twice daily for two days and followed on the third morning by a dose of castor oil. They are also useful in cases of sprains, etc. For this the seeds are boiled or roasted in about two tablespoonfuls of ghee and the whole added to ¼ seer of water mixed with a pinch of salt, and taken in a single draught. Bruised with vinegar, lime-juice or hot water, they can be made into a *plaster* or *poultice* for external application. The black *seeds* as well as the *leaves* are administered in *decoction* in convulsive affections and typhus fever in doses of four ounces. The *juice* of the leaves is used as an anodyne instillation for relief of pain in otalgia and catarrhal inflammations of the middle ear; but it produces a burning sensation. The *leaves* are applied to boils to prevent the formation of pus.

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416. GYNOCARDIA ODORATA or G Hydnocarpus and Taraktogenos Kuzzi.

(*N. O.*—DIXINEAE.)

Eng. Hind. Ben. Mah. & Bom.—Chaulmugra. *Pers.*—Birinjmogra. *Can.*—Surantacil. *Cing. & Burm.*—Talien-noc. *Nepal.*—Kadu.

Habitat—Lower Himalayan ranges, Sikkim, Kassia Hills, extending to Rangoon and Chittagong.

Parts Used.—The seeds and oil from the seeds.

Constituents—The seeds contain a fixed oil—Chaulmogra oil; it is obtained by hot expression from the seeds of Taraktogenos Kuzzi. The oil deposits on keeping crystalline fat and contains palmitic acid 60 p. c., and therefore solid in cold climates. It contains gynocardic acid 11 p.c., the active ingredient, associated with palmitic acid, cocinic acid 2.5 p.c, and hypogoeic acid 4 p.c. Both of the latter acids are found either combined with glycerides as fats or in the free state. Sir L. Rogers and Dr. Muir of Calcutta have worked separately and isolated " ethylic ether " products of sodium and potassium, from the oil. The result of the analysis of the seeds is as follows.—Fatty matters 30 to 35 p. c, organic matters 4 to 5 p.c., coloring matters 6 p.c. albuminoids, fixed salts, glucose, cellulose etc., in small proportions. The bark contains tannin.

Action.—The seeds and oil are alterative and tonic, and are said to improve the quality of the blood.

Uses.—*Chaulmogra oil* as obtained in the bazaars, is of a more or less dark colour, thick, and usually adulterated. The oil is in great repute in India as a remedy for leprosy; it has also been advantageously administered in scrofula, skin diseases and chronic rheumatism. The best form of administration is in the form of *powder of the seeds* in doses of six grains thrice daily in pill-form with the aid of soap gradually

increased to three or four times that amount or until it causes nausea, when the dose should be diminished or the use of the remedy suspended for a time. The dose of the oil is from five to six drops *gradually* increased to 30 minims, given after meals in emulsion with gum acacia and syrup or in milk or combined with 30 drops of cod liver oil or preferably in capsules During its use all salt meats, acids, spices and sweet-meats are to be avoided ; on the other hand butter, ghee and oily articles of diet aid its action and are therefore recommended. It has been successfully given in phthisis, and also applied *externally* to the chest ; also as an inunction in chronic skin diseases, chronic rheumatism, gout and secondary syphilis. The *gynocardic acid* which is its active constituent is given in doses of $\frac{1}{4}$ to $\frac{1}{2}$ grain made into pills with its six times of the extract of hops or of gentian or conserve of roses. Both the oil, and the acid are applied as *ointments* combined with vaseline- Gynocardic acid ointment which is a local stimulant, is made by mixing 15 to 25 grains of the acid to an ounce of vaseline ; it is used as an application for herpes, tinea, leprosy and other skin diseases as psoriasis and eczema of the face and head, and acts as a specific. *Chaulmugra ointment* known as Unguentum Gynocardiae is made by mixing 1 part of the oil with 4 of vaseline or lanoline or by beating the seeds deprived of husks into a paste with a sufficiency of simple ointment. It is a useful application in many skin diseases especially in herpes and tinea. The beneficial effects of the drug may be produced by inunction also of a mixture of equal parts of Chaulmugra and neem oils or a soap incorporating gynocardic acid would possess much

of its soothing and remedial effects in many forms of skin diseases. *Magnesium gynocardate* has been tried with some success in leprosy and is said to agree better than the oil. The action of the oil in leprosy, though believed to be, at the best, palliative, is nevertheless more marked than that of gurjun oil, as the prolonged and regular use of the oil might arrest the progress of the disease.

Haplotaxis Auricula—See Saussurea Lappa.

Haplotaxis Costus—See Costus Speciosus.

417 **Hardwickia Pinnata** is a species of Leguminous Genus (*Mal.*—Matayen ; Samprani ; Genne ; Kolla ; Shurali, *Tam.*—Kolavu. *Can.*—Yenne.) found on the Ghats of Kanara, Travancore and Carnatic. The *balsam* or oleo-resin has the smell and taste of Copaiba ; it has been used in India for gonorrhœa and is said to have given success. Chemically the essential oil which is contained to the extent of 25 to 40 p.c., was found to have the same composition as that of Copaiba ; two kinds of resin were found ; of these one was acid ; but crystals of Copaic acid could not be obtained by Broughton.

418 **Hedychium Spicatum** is a species of Scitamineæ (*Sans.*—Kapur kachili ; Shedwa, *Hind.*—Sitruti. *Punj. Mah. Guz. & Hind.*—Kapurkachur. *Himalaya.*—Sheduri. *Duk.*—Velati kachur) found in Subtropical Himalaya. The *tuber* has a camphoraceous smell of long zedoary. It contains starch, cellulose, mucilage, albumen, saccharine matter, acid resin, fixed oil and an odorous body. It is stomachic, carminative, tonic and stimulant, useful in dyspepsia in the form of *powder* or

decoction (1 in20) in doses of 1 to 2 ounces. It is used in the preparation of cosmetic powders to promote the growth of hair. The sliced root is an ingredient in 3 kinds of powder known as *Abir:*—White Abir, Abir called *Ghisi* in Hindi and *Padi* in Guaratee and Black Abir or *Bukka* of the Deccan. The aromatic root-stalks are also used as a perfume along with *Henna* (Lawsonia alba) in preparing the cloth known as *Malagiri* in U. P.

419. **Hedyotis Auricularia** is a species of Rubiaceae (*Fr* :—Hedyotis auriculaire. *Ger.*—Wahres Ohrkraût) found in Bengal. It is used in deafness. The *leaves* are employed as an emollient application to abscesses, and as a salve for wounds.

420. **Hedyotis Umbellata**; H. Hispida; H. Indica. (*Sans* :—Rajana. *Tam* :—Saya. *Tel* :—Cheri-veru. *Mal.*—Chay-ver. *Can* —Chay-beru) are species indigenous to Rameswaram, much cultivated on the sea coasts for the sake of its root (*Chay-root*) which gives the best and most durable red dye for cotton cloth. The *leaves* are considered expectorant and in dry powder made into cakes with flour and used in asthma and phthisis. The decoction of the root and leaves (1 in 20) is used as a wash for poisonous bites of venomous animals, and internally in cough, asthma and consumption in doses of ½ to 1 ounce. The decoction for internal use is generally combined with aromatics like Adiantum Limatum or Hydrocotyle Asiatica. For burning at the pit of the stomach the leaf-juice is given with milk and sugar, and externally it is a good application for the burning of the palms and soles of feet in fevers.

421. HEDYSARUM ALHAGI or Alhagi Maurorum.

(*N.O.*—LEGUMINOSAE.)

Sans.—Duralabha; *Eng.*—Camel's thorn; Khorasan-Thorn. *Ben.*—Juwasa. *Hind.*—Yavasa. *Mah.*—Belikamuli. *Bom.*—Jabusa: Dhamasa *Tel.*—Pilaregati. *Tam.*—Tulgonri. *Can.*—Ballidurubi. *Arab.*—Sankula-jamala; Haja Akkula. *Pers.*—Khar-e-Shutra. *Arab. Pers. Hind.* & *Bom.*—Turanjabin (the manna or the sugary exudation).

Habitat.—Indigenous to the forest regions of Africa and Western Asia met with from Egypt to Persia and N. India as far south as the Deccan and Concan.

Parts Used.—The thorny flower-stalks and branches of the plant and the manna (the sweety exudation from the leaves and branches which occurs in small brownish granular tears mixed with impurities).

Constituents.—The manna contains a crystalline principle which is readily converted into glucose on boiling with an acid. It also contains cane sugar.

Action.—Laxative, diuretic and expectorant. The manna is cholagogue; it is used as a demulcent and aphrodisiac. The fresh juice is used as diuretic.

Uses:—The plant is used in the form of *decoction*; it is useful as a laxative, specially for children. The following *electuary* is recommended for the cough of children.—Take of the extract of Alhagi Maurorum (extract obtained by evaporating a decoction of the plant or the sugary manna), raisins, chebulic myrobalans and long pepper in equal parts, powder and mix with honey and clarified butter to make a pill mass. It is given in the form of pills in doses of 5 to 10 grains. The fresh *juice*

is given generally in combination with aromatics in suppression of urine. In suppression of urine and constipation, the following compound decoction is recommended in Sharangdhar.:—Take of Alhagi maurorum, Chebulic myrobalans, pulp of Cassia fistula, fruits of Tribulus terrestris and root of Coleus aromaticus; prepare a decoction in the usual way and administer it with honey; dose—½ to 1 ounce. The manna is given with milk as a restorative. *Externally* the plant is used in the form of *poultice* as an application for piles; a *fumigation* of it is also useful in such cases. The expressed juice of the plant is dropped into the eyes to remove opacities; the juice is also *sniffed up* as a remedy for megrim. "In the Concan the plant is smoked along with black Datura, Tobacco and *Ajwan* seeds as a remedy for asthma"—(Dymock). An *oil* prepared with the leaves is used in rheumatism.

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422. HEDYSARUM GANGETICUM.

(*N.O.*—Leguminosae.)

Sans.—Salaparni; Daye. *Hind.*—Sarivan. *Ben.*—Salpani. *Bom. Mah. Kon.* & *Guz.*—Salvan. *Tel.*—Gitanaram; Kolaku-ponna.

Habitat.—The lower Himalayan region and throughout the plains of India.

Parts Used.—The whole plant—the root and bark.

Constituents.—The root contains extractives, a yellow resin, oil, an alkaloid and ash 6 p. c.

Action.—Bitter tonic, febrifuge, digestive and anti-catarrhal. Sanskrit writers describe it as alterative and tonic.

Uses.—A decoction (1 in 10) of the root is used in fevers; dose—2 to 6 drachms. A compound decoction made of *Salaparni*, *Balabija* (seeds of Abutilon Indicum) or root of Sida Cordifolia, raisins, Cocculus cordifolia, Hemidesmus Indicus, taken in equal parts, is useful in remittent fever in doses of ½ to 1 ounce. It is an ingredient of *Dasamula kvatha* which is considered to be antipyretic, alterative and bitter tonic, in doses of 1 to 2 ounces twice a day. The *dasamula* or ten roots are:—Hedysarum Gangeticum, Uraria Lagopodioides (*prisniparni*), Solanum Jacquinii, Solanum Indicum, Tribulus Terrestris, Aegle Marmelos, Colosanthes Indica, Gmelina Arborea, Stereospermum (*patala*) and Premna Spinosa (*ganikarika*). The first five in the above list, are collectively called *hrasvapancha mula* or the five minor plants, and the last five are called *vrihat pancha mula* or the five major plants. A decoction of the *hrasva panchamula* is used in catarrhal fever, cough and other diseases supposed to be caused by deranged *kuffa*. The *vrihat pancha mula* is used in fever and other diseases supposed to be caused by deranged *vata*. The ten drugs together are used in remittent fever, puerperal fever, inflammatory affections within the chest, affections of the brain and many other diseases supposed to be caused by derangement of *vata*, *pitta* and *kafa*. Another combination called *Ashtadasanga pachana* consists of the ten drugs above mentioned, with the addition of the eight following namely, chiretta, *devadaru*, ginger, tubers of Cyperus rotundus (*mustaka*), root of Picrorrhiza Kurroa (*katuki*), *indrajava* seeds, coriander, and fruits of Pothos officinalis. A decoction of these eighteen drugs is used in fevers of

a severe type with drowsiness, delirium, picking of bed clothes, insensibility and difficult breathing. A preparation of aconite and arsenic is generally given along with it—(Chakradatta.)

Dasamula taila :—This is an oil prepared with a decoction of the ten drugs above mentioned, and is much used as a cooling application in headache and other diseases. To prepare it take of the ten drugs, in all twelve seers and a half, water sixty four seers. Boil down to 16 seers and strain. To the strained decoction add four seers of lemon juice, 4 seers of prepared sesamum oil and a seer of the usual aromatics and colouring agents in the form of a paste and boil them together—(Chakradatta).

423. Hedysarum Purpureum or Desmodium Polycarpum is another member of the same Family met with in the Himalayas and elsewhere in the plains and known as *Baephol* among Santals is used by them in fainting and convulsions—(Rev. A. Campbell).

Hedysarum Triflorum or Desmodium Heterophyllum —See Desmodium Triflorum.

Hedysarum Tuberosa—See Pueraria Tuberosa.

424. Helianthus Annuses (*Sans* :—Arkakantha; Adityabhakta. *Hind* :—Hurduja. Ben :—Suryamukhi. *Eng* :—Sunflower. *Guz* :—Surajmukh. *Tel.*, *Tam.*, & *Can* :—Suryakanti. *Kon* :—Suryakamal. *Pers* :—Guli-aftab) is a species of Compositae. This plant with its large coarse yellow flowers is common in Indian gardens, in swampy and malarious districts as its presence is said to purify the air. The *oil* expressed from its seeds is used for culinary and table purposes like olive or almond oil; it is also employed for industrial purposes such as

woollen dressing, candle and soap-making. Its oil-cake is a valuable food for cattle and poultry.

425. **Helianthus Tuberosus** or Cynara Scolymus (*Sans.*—Hastipijoo, vajrangi. *Eng.*—Artichoke. *Fr.*—Artichaut. *Urdu.*—Hathichak) is a Jerusalem plant, the root of which is boiled and used as a delicious vegetable; it is highly aphrodisiac and promoter of semen.

426. **Helicteres Isora** (*Sans.*—Mrigashenga; Avatarni. *Eng.*—Indian Screw-tree. *Hind.*—Morarphali. *Ben.*—Atmora; Gubadarra. *Pers.*—Kist-bar-kisht. *Duk.*—Dhamini. *Sind.*—Vurkatee. *Mah.*—Maedasingi; Murada singe. *Tel., Tam. & Mal.*—Valumbari. *Can.*—Bhootakaralu. *Kon.*—Kivantanini) is a shrub belonging to Sterculiaceae, common in Central and Western India. The *fruits* consisting of spirally twisted carpels, are employed in intestinal disturbances such as colic etc. The *root-bark* in decoction, or its *juice* is given in diabetes; it is said to lessen the quantity of sugar. It is also used in diarrhoea and dysentery, given to relieve the griping pain in the bowels, and flatulence among children. According to Moideen Sheriff it is demulcent and mild astringent. Dose of the *powdered bark* is from 5 to 30 grains. The *seeds* powdered and mixed with pure castor oil forms an excellent application in otorrhoea, ulcers in the ear etc. A decoction of the leaves is used for clysters in Jamaica.

Heliophylum Indicum—See Helianthus Tuberosus.

427. **Heliotropium Eschwaldi** or H. Europeum is a species of Boragineae (*Punj & Hind.*—Nilkattei; Bithua; Atwin. *Cash.*—Chirgas) is met with in the plains of Cashmere, Punjab, Sind, & Meywar. The plant

is emetic and employed in snake bite, internally, and applied locally in combination with tobacco oil.

H. Undulatum is another species of almost the same action and used similarly as the above.

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428. HELIOTROPIUM INDICUM; H. Cordifolium.

(*N. O.*—BORAGINEAE.)

Sans.—Srihastini; Suryavarta. *Eng.*—Heliotrope. *Hind.*—Hatta-juri. *Mah.*—Bhurundi. *Guz.*—Hathisundhana. *Ben.*—Hattisura. *Tel.*—Nagadanti. *Tam.*—Nakkipoo; Tet-kodukki. *Can.*—Chalukondee. *Mal.*—Telkata; Teliyenni. *Kon.*—Ajeru. *Fr.*—Heliotrope-des-Indes.

Habitat.—A small fragrant plant, indigenous to Cochin-China, but found in ditches in many parts of India.

Parts Used.—The herb.

Constituents.—The stems and leaves contain tannin, a non-crystalline organic acid and an alkaloid soluble in ether.

Action.—Local anodyne.

Uses.—The juice of the leaves is used as an application to wounds and sores, to boils and gum-boils and to repel pimples on the face; boiled with castor oil it is applied to the bites of scorpions and of insects, to relieve pain caused by them. It is also employed locally in the kind of ophthalmia in which the tarsus is inflamed or excoriated,

429. Heliotropium Strigosum & H. Brevifolium. (*Eng.*—Indian Forget-me-not, Red Jasmine. *Hind.*—Chitiful. *Punj.*—Gorakhpamo. *Kon.* & *Mah.*—

Sanjuvanchivel; Sitache-kes) are two species of the same Genus found throughout India; they are said to be laxative and diuretic in action; their *juice* is used like the above species, as an application to gum-boils, sore eyes and sores generally to promote suppuration and as a cure for the stings of nettles and insects.

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430. HELLEBORUS NIGER; H. Officinalis; H. Viridis.

(*N. O.*—RANUNCULACEAE.)

Sans.—Vakragra; Katurohini; Krishnabhedi. *Eng.*—Black Hellebore. *Hind.*—Kalikatuki. *Mah.*—Balakadu. *Tel. Can. Kon.* & *Mal.*—Katukarohini. *Bom*—Kutki. *Guz.*—Kuddu. *Arab.*—Khartu; Kuerbeck. *Pers.*—Kharabekahindi, *Tam.*—Katurohini. *Cing*—Calurana. *Cash.*—Kaur.

Habitat.—Found plentifully on the Ghauts and in the hilly districts of India.

Parts Used.—The dried rootlets and rhizome.

Constituents.—Helleborine and Helleborein—both crystalline and poisonous resin, fat, etc. Helleborine is insoluble in water, but soluble in alcohol and chloroform. Helleborein is very soluble in water, slightly so in alcohol and insoluble in ether.

Action.—Hydrogogue cathartic, emmenagogue and anthelmintic; in large doses acro-narcotic poison. In small doses it acts like digitalis, as a cardiac tonic, slows the frequency of the heart. In toxic doses it causes gradual paralysis of the heart, convulsions and death. As a local anaesthetic for ophthalmic treatment, it is more powerful than cocaine; 3 to 4 drops of 1 p. c. solution of helleborein causes complete anaesthesia

lasting for half an hour, of the conjunctiva and cornea for operative purposes.

Uses.—The root of this plant was formerly employed in apoplexy, amenorrhoea, epilepsy, dropsy, hypochondriosis, mania, melancholia and chronic skin affections; and worms. It is now prescribed under great care, as it is in large doses an acro-narcotic poison. The dose of the *powdered* root is from 5 to 10 grains; with aromatics it is given in dyspepsia etc., in doses of 10 to 20 grs; dose of the *tincture* is one drachm, and of the *fluid extract*,—5 to 20 minims; of the *solid extract*,—1 to 4 grains cautiously; of the powdered root as a purgative, the dose is 1 drachm. *Kalikatuki* is used chiefly as a bitter and antiperiodic for children, as its name *Balkadu* indicates. It is not believed to have any drastic purgative properties by Hindu Vaidyans; if at all, very mild properties of this nature.

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431. HEMIDESMUS INDICUS or Asclepias Pseudosarsa *var.* Latifolia.

(*N. O.*—Asclepiadeae)

Sans.—Sugandhi; gopimulam; Anantamul. *Ben* & *Punj.*—Anantamul. *Eng.*—Indian Sarsaparilla. *Hind.*—Kalisar; Hindi salsa; *Mah.*—Upersari; Dudhasali. *Pers.*—Yasmine barri; Aushbahe-hindi. *Fr.*—Periploca des Indes. *Ger.*—Hemidesmus wurzel. *Tel.*—Sugandhipal. *Tam.* & *Mal.*—Nannariver. *Can.*—Namada-beru; *Kon.*—Dudvali. *Cing.*—Irimusu. *Arab.*—Zaiyana, Ausaba lunnara. *Port.*—Upercao.

Habitat.—This climbing plant is found throughout India, common in Bengal and extending to Travancore and Ceylon.

Parts Used.—The root, root-bark and juice.

Constituents.—Coumarin (the aroma and taste of the drug are due to this constituent), a volatile oil, a crystallizable principle,—hemidesmine and a crystalline stearoptin called smilasperic acid.

Action.—Valuable alterative, tonic, demulcent, diaphoretic and diuretic. It is also said to possess the sudorific and alterative properties of Jamaica sarsaparilla.

Preparations.—Infusion, Decoction, Syrup, Liquid extract, Powder and Paste.

Uses.—The fragrant root-barks of this plant are prescribed in dyspepsia, loss of appetite, fever, skin diseases and ulcerations, especially those of syphilitic origin, constitutional syphilis, chronic rheumatism and leucorrhoea. The hot *infusion* of the root-bark with milk and sugar is a good alterative tonic, especially for children in chronic cough and diarrhoea. The *root powdered* and mixed with cow's milk is given with much benefit in cases of scanty and high coloured urine and in those of gravel and strangury ; it is also given in infusion or decoction with or without cumin seeds in two to three ounce doses with milk and sugar added thrice daily. Like Jamaica Sarsparilla it is useful in affections of the mucous membrane generally. Indian Sarsaparilla is said to be more useful than the American Sarsa root as an alterative tonic. It is a valuable remedy for the second and third stages of syphilis and its numerous manifestations, *e. g.*:—eruptions, syphilitic rheumatism etc., kidney and urinary disorders of various kinds and constitutional debility. In the form of syrup it trebles or quadruples the quantity of urine, increases the appetite;

it is therefore useful in dyspeptic disorders the dose is ½ to 1 drachm. The root tied up in plantain leaves, roasted in hot ashes and then beaten into a mass with cumin and sugar and mixed with cows ghee, and given twice daily morning and evening is a household remedy in genito-urinary diseases. For ulcers and swellings *paste of the root* is applied to cleanse and cure. The *milky juice* is dropped into inflamed eyes; it causes copious lachrymation and afterwards a sense of coolness in the part. For vomiting, nausea etc., the root is well boiled in water, strained off and the dregs ground with a little asafoetida and made into a thin paste and then mixed with ghee. This is given in the morning to stop vomiting etc. For internal administration the root is generally used in combination with a number of other medicines. The following are a few examples,—(1) Take of *Anantamul*, root of Pavonia Odorata (*Bala*), tubers of Cyperus rotundus (*Mustaki*), ginger and the root of Picrorrhiza kurroa (*Katuki*), equal parts, in all two tolas, and reduce them to a paste with water. This dose, administered with warm water in the morning, is said to clear the bowels and relieve fever—(Bhaishajyaratnavali). (2) A *decoction* of the roots of colocynth, *anantamul*, *sariva* and Hedyotis biflora (*Parparta*) prepared in the usual way is administered, with the addition of powdered long pepper and bdellium (*guggula*), in chronic skin diseases, syphilis, elephantiasis, loss of sensation and hemiplegia—(Sharangadhar). (3) A *compound powder*.—Take of Hemidesmus root 5, Andropogon muricatus 4, *Nagara motha* 5 *Kutaki* 6, and *Sunth* (dry ginger) 4 parts. Mix and make a powder; dose is half a drachm, useful in

chronic diseases of the skin, syphilis etc. (4) A distilled compound preparation for blood purification.—Take 4 *chataks* of each of *Ushba*. China root, Hemidesmus root, myrobalans, large cardamom, Sphaeranthus Indicus *mundi*, 1 *chatak* flower of Neem tree and 1 *chatak* Indian Pennywort. Grind them well and keep them immersed in 12 seers of water for 24 hours—12 hours in the sun and 12 hours in the moonlight, and then distil it. Add a few grains of camphor to the distilled water and keep it preserved in corked bottles for two weeks, when it will be ready for use; dose.—2 tolas in the morning and evening. It is said to promote health and vigour and invariably cure all kinds of diseases caused by vitiated blood.

432. **Hermodactylus Gol** is a species of the Genus Colchicaceae or Melanthaceae (*Eng.*—Daffadilla; Finger of Hermes. *Sans.*—Pashchimadeshiya; Shatangatakam; Mishtabakatu. *Urdu* & *Arab.*—Suringana; Shirina. *Pers.*—Shambalida. (Bitter variety.)—*Eng.*—Meadow Saffron. *Arab.* & *Cash.*—Surinjan-i talk). It is indigenous to Cashmere and Persia; its tubers are obtainable in Indian bazaars. The *tuber* is of a white, yellow or black colour. The white is not bitter; the yellow is slightly bitter. Both are used in medicine. The black is poisonous. In the sweet variety the corm is starchy, dirty yellow externally and white within. In the bitter variety the colour is dirty brown and inside it is pale-white and starchy. The starch is in silvery and shining granules. It is of an acrid odour. The chemical composition of the non-bitter or tasteless variety as obtained by Lecanu is.—Starch (form-

ing the bulk of drug), fatty matter, yellow coloring matter, gum, supermalates of lime and potash and chloride of potassium. Comparative analysis of the bitter and the sweet variety shewed that the bitter variety contained a resin whereas the sweet kind consisted of fat. Both drugs contained an alkaloid and both contained an organic acid related to malic acid. A much larger quantity of Fehling reducing principle was present in the sweet than in the bitter drug. With regard to its action Unani physicians consider it to be deobstruent, alterative, sedative, diuretic and aperient. With aloes it is given in chronic gout, torpid liver, dropsy and enlarged spleen. As an aphrodisiac it is given with *trikatu* or ginger and pepper in seminal weakness. A *paste* made of the bitter variety with saffron and white of eggs is applied to rheumatic and other swellings. Locally it is applied to excite the genitals. The *powdered root* is sprinkled on wounds to promote cicatrization. Internally the sweet variety is given to check intermittent fever, to relieve bronchial catarrh and congestion of the air-tubes and to cure dysentery. It is also useful in hysteria, chorea, whooping cough and epilepsy. The dose of the powder is 15 grains. The bitter variety is regarded to have properties similar to Colchicum B. P., and therefore a good substitute for it. The bitter bermodactyle comes from Cashmere and the sweet kind from Persia. The following two preparations are in use among Unani physicians :—(1) Take of the sweet variety of Hermodactylus Gol 4, Cassia lanceolata 3, Ipomoea turpethum 5, Pharbitis nil 5, Chebulic myrobalans 3, Almonds 2, Rose buds 3, Convolvulus scammonia 2, Saffron 3, Apium graveolens 2, Daronicum scorpioides 2, Black

cumin seeds 3, White Plumbago zeylanica 2, and Lawsonia alba 1 part. Mix and make a confection; dose.—grs. 10 to 15; used in gout and rheumatism. It relieves constipation and congestion of the liver. (2) Take of Hermodactylus Gol (*Tulkha*) 4, Jeravand-e-madraja 3, Lapis sabulasus (Osteo colla—a stalactites of carbonate of lime, (Mamai) 1, Withania somnifera 4, Musk 1, Saffron 2 and Cinnamomum cassia 4 parts. Mix, add the oil of Mustard seeds and boil. This is used as a stimulant application to the face in facial paralysis and to painful rheumatic joints.

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433. HERPESTIS MONNIERA.

(*N.O.*—SCROPHULARINEAE.)

Sans.—Jala-Brahmi; Svetakamini; Manduki. *Eng.*—Thyme-leaved Gratiola. *Hind.*—Barambhi; Safed-Kammi *Ben.*—Dhopkammi; Adhabirani. *Can.* & *Kon.*—Brahmi. *Mah.*—Bamba. *Tel.*—Sambrani-chettu. *Tam. Mal.* & *Can.*—Neerbrahmi.

Habitat:—This small creeping plant is found in marshy grounds throughout India.

Parts Used:—Whole plant—root, stalks and leaves.

Constituents:—A trace of oily matter soluble in alcohol, two resins (one easily soluble in ether), an organic acid, a tannin and an alkaloidal principle.

Action:—Nervine tonic: leaves and stalks are diuretic and aperient.

Uses:—The whole plant including the root is employed medicinally. Half a tola of the fresh *juice* of the leaves boiled with *ghee* and formed into a *ghrita* or mixed with two scruples of *pachak* root (Aplotaxis auriculata) and honey is given in insanity, epilepsy and bilious

disorders. The *leaves* fried in clarified butter are taken to relieve hoarseness. The *leaves and stalks* are particularly useful in the stoppage of urine which is accompanied by obstinate costiveness. A *poultice* made of the boiled plant is placed on the chest in acute bronchitis and other coughs of children. The *juice* of the leaves is given in the diarrhoea of children; as *lep* it is applied to swellings. Juice mixed with petroleum is a good application in rheumatism. The following preparations are recommended by ancient Sanskrit writers:—A *powder* composed of equal parts of *brahmi*, Acorus calamus, chebulic myrobalan, root of Justicia adhatoda and long pepper is given with honey in the hoarseness of phthisis—(Bhavaprakasa). *Brahmi Ghrita* or Medicated Ghee.—This was recently tested by Dr. M. C. Koman in cases of hysteria and epilepsy, which, he says, were considerably benefitted by its use—(Indigenous Drugs Report, Madras). Dose is from half to one tola taken twice a day with milk. It is also useful in insanity, neurasthenia, aphonia, hoarseness etc. The drug is also used in the form of *syrup* given in doses of 1 to 2 drachms twice daily after meals. The *Brahmi ghrita* is prepared thus.—Take of old clarified butter four seers, fresh juice of *brahmi* four seers, Acorus calamus, *pachak* root and the root of Canscora decussata (*Sankhapushpi*), equal parts, in all thirty-two tolas, in the form of a *paste* and boil them together till the watery portion is evaporated. An *oil* is also prepared with this drug which is used in habitual headaches, to relieve brainfag etc.

434. HIBISCUS ABELMOSCHUS; H oschatus or Bamia Moschatus; Abelmoschus Moschatus.

(*N. O.*—MALVACEAE.)

Sans.—Latakasturika. *Eng*.—The Musk-mallow. *Fr*.—Ketmia ambretta. *Hind*. & *Ben*.—Mushk-dana; Kasturi-dana. *Arab*.—Hub-ul-mishk; Kabbu-mishka. *Pers*.—Makstan. *Tel*.—Kastoori-benda; Karpuri benda. *Mah*.—Kala-kasturi. *Bom*.—Mishkadana. *Mal*.—Katta-kasturi. *Tam*.—Vattilai-kasturi. *Can*.—Kadu-kasturi. *Cing*.—Kapukimissa. *Kon*.—Kasturi bhendo.

Habitat:—A herbaceous annual grown in many parts of India for its fibre common in Bengal and found in most tropical regions.

Parts Used:—The seeds, root and leaves.

Constituents:—Gum, albumen, fixed oil, a solid crystalline matter, odoriferous principle and resin. The fixed oil is a greenish yellow fluid which solidifies on exposure to the air.

Action:—Seeds are stimulant, carminative, cooling, demulcent, stomachic and antispasmodic.

Preparations.—Decoction, Infusion and Tincture of the seeds. Dose is one to two ounces of the decoction or infusion, and one to two drachms of the tincture. Powder and Paste for external use.

Uses.—The *seeds* in *infusion*, or *decoction* or *tincture* are useful in nervous debility, hysteria and other nervous disorders, atonic dyspepsia and a few other conditions in which musk is indicated. The scented seeds are used to some extent in perfuming medicinal oils. In Arabia they are mixed with coffee. They enter into

the composition of some compound prescriptions recommended for gonorrhoea, catarrh of the bladder and of the air passages. They are used as a drink in fevers, gonorrhoea etc., and as an *inhalation* in hoarseness, and dryness of the throat. *Powdered seeds* steeped in alcohol are applied to the bites of serpents. The seeds rubbed to a *paste* with milk is used to cure itch. *Mucilage* prepared from the *root* and *leaves* of the plant is recommended in gonorrhoea.—(Makhzan-el-Adwiya).

435. **Hibiscus Cannabinus** (*Sans*—Sana; Machika Phalamla. *Eng.*—Brown Indian hemp. *Fr.*—Khetmie-a -feuilles de chauvre. *Ger.*—Hanfartige ketmie. *Hind.*—Patsan. *Ben.*—Mestapat. *Duk.*—Ambadi. *Tam.*—Phalungu. *Tel.*—Ghongukuru. *Santal.*—Dare kudrum. *Uriya.*—Kanuriya. *Sind.*—Sajjado. *Guz.*—Bhindi; Ambol. *Mah.* & *Kon.*—Ambadi. *Can.*—Pinidrike gida) is a species generally cultivated in most of the tropical countries for its fibres; it is found wild in the east of the northern Ghauts. The *seeds* yield an edible oil—the *Habel-zalim* of Persia, which is used as an external application to pains and bruises; internally it is said to be aphrodisiac and fattening. One tola of the *juice of the flowers* with sugar and black pepper is a popular remedy for biliousness. The *leaves* are purgative; they are used as a pot-herb.

Hibiscus Esculentus *Var.* Cancellatus or H. Longifolia.—See Abelmoschus Esculentus.

436. **Hibiscus Furcatus**—(*Can*:—Huligowri. *Kon.* Hodlo Ranbhendo. *Cing.*—Napiritta) is a large climber growing over trees and bushes in the hotter parts of India.

from Bengal to Ceylon. The *roots* infused in water make a cooling drink for the hot weather—(Talbot.)

437. **Hibiscus Lampas** (*Ben & Assam*—Bankapas. *Mah.*—Ranbhendi. *Tel.*—Adavipratti; Condapatti) is found in tropical Himalaya from Kumaon eastwards, Bengal and the Western peninsula. The root and fruit are employed as a remedy in gonorrhoea and syphilis-(Campbell.)

438. **Hibiscus Micranthus** (*Porbunder & Cutch.*—Adban Buporio; Darianujhad. *Mah.*—Kurudvel. *Guz.*—Chanak Bhindo. *Tam.*--Perumaddi) is found in the hotter parts of India from U. P. eastward and southward to Ceylon. In Ceylon it is valued as a febrifuge.

439. **Hibiscus Populnea** (*Sans.*—Gardha bhanda; Suparashvaka. *Eng.*--Heartwood. *Hind.*--Parus pipal. *Eng.*—Portia tree; Tulep tree. *Fr.*—Thespesia afeuilles de peuplier. *Ben.*—Paresh. *Mah. & Bom.*—Bhendi. *Duk.*—Porish *Tel.*—Ganguranichettu. *Guz.*—Parusa Pipalo. *Tam.*—Chandamaram; Parushamaram. *Mal.*—Puvvarashah. *Can.*—Kandarola mara. *Kon.*—Vadlikharaikapus) is found in tropical shores from Bengal to Ceylon. The *ripe seeds* contain phosphoric acid; the heartwood contains a garnet red resin insoluble in water soluble in benzol and ether. The seeds contain a dark red oil known as "huile amere." In action the *plant* is considered to be alterative and stimulant. According to Vaidyans it is "constipative, demulcent, phlegmatic, and generative of semen." The *fruit* is acidulous and the root is sweet.—It possesses the properties of *Asvatha.* The *heart-wood* which contains a resin insoluble in water is a remedy in bilious attacks and colic and in a kind of of pleurodynia from which the Malayas often suffer. The

fruit abounds in a viscid yellow juice which is used as an external application to bruises, sprains, insect bites especially of the centipedes, in psoriasis, scabies, to sores and fistula and to inflamed joints. The *juice of the leaves* also is used similarly. As *poultice* they are applied to inflamed painful joints. A *decoction of the bark* (1 in 10) is given internally in 2 to 4 ounce-doses twice daily. *Externally* it is used for washing the skin diseases ; also as depurative in dysentery, haemorrhoids &c. An *oil* prepared by boiling the ground bark in cocoanut oil is also used for applying to skin diseases. The contents of the fruit (which is a capsule) are applied to ringworm together with or without the ground leaves. A *compound oil* of the bark and capsules is given in cases of urethritis with much benefit. The *root* is used as a tonic. The *flowers* also are employed in the cure of itch.

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440 HIBISCUS ROSA SINENSIS.

(*N. O.*—MALVACEAE.)

Sans.—Japa ; Rudrapushpa. *Eng.*—China Rose or Shoe-flower plant. *Fr.*-Rose de Chine ; Ketmie de Cochin Chine. *Ger.*—Rosen artige Ketmie. *Hind.*—Jasund ; Gudhal. *Ben.*—Jaba. *Guz.*—Jasunt. *Mah.*—Jasavanda. *Tel.*—Javapushpamu ; Daanachettu. *Tam.*—Shamberattai ; Shappathuppu. *Mal.*—Champarutti. *Can.*—Dasanige. *Pers.*—Angharce-hind. *Kon.*—Dasun.

Habitat.—Very common in flower-gardens of India.

Parts Used.—Roots, flowers and seeds.

Action.—The flowers are refrigerant, emollient, demulcent and aphrodisiac ; also emmenagogue. The dark-red petals are demulcent. The leaves are considered emollient and aperient.

Uses.—The *flowers* of this plant fried in ghee are given in menorrhagia; the dark-red *petals* are administered in the form of a *mucilaginous infusion* in ardor-urinae, strangury, cystitis and other irritable conditions of the genito-urinary tract; it is also a refrigerant drink in fevers and a demulcent in cough. Combined with milk, sugar and cumin the *petals* or the fresh *root juice* of the white flowered variety is given in gonorrhoea. In menorrhagia *powder of the root* combined with equal quantity of the powdered lotus root and the bark of Eriodendron Anfractuosum (*Sveta shalmali* or white silk cotton tree) is given in doses of 1 to 1½ drachms, with benefit. The *seeds pounded* into a pulp and mixed with water are given with much benefit in gonorrhoea. The *expressed juice of the leaves* is also given. An *oil* made by mixing the juice of the fresh petals and olive oil in equal proportions and boiling till the water has evaporated is useful as a stimulating application for increasing the growth and colour of the hair. In China a black dye is prepared for the hair and the eye. The *buds* are employed in the cure of seminal weakness. The *root* is valuable in cough.

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441. HIBISCUS SUBDARIFFA.

(*N.O.*—MALVACEAE.)

Eng.—Roselle, Red Sorrel. *Fr.*—Ketmic Acide; Oscille rouge de Guince. *Ger.*—Rothe Sabderiffe. *Hind. Guz. & Mah.*—Lalambari. *Ben.*—Mesta; Patwa. *Tel.*—Seemagogu; Erragonkaya. *Tam.*—Seivappukaychurai; Kashuck kali. *Mal.*—Pulicheera. *Can.*—Pundisoppu. *Santal.*—Arak-kudrami.

Habitat.—This plant is largely cultivated for its pleasant acidulous calyxes in hotter parts of India.

Parts Used.—The fleshy red calyx, seeds, fruit and leaves.

Constituents :—Potash, tartaric and malic acids, watery extract, cellulose and ash. The fleshy red calyx contains tartaric acid, uncrystallizable sugar, mucilage, tannin, colouring matters and salts.

Action :—Emollient, demulcent and cooling; it has also a certain amount of acidity which stimulates and at the same time neutralises the bilious secretion and thus prevents oppression of the stomach. Fruit is anti-scorbutic.

Uses :—The fleshy *red calyx* is used as a fruit and and when dried it is used as an acid article of diet and a cool and refreshing drink like that of tamarind. A *jelly* is also made from it. Of the *seeds* a *decoction* in doses of 1 to 2 drachms three or four times a day, is useful in cases of dysuria and strangury and in some mild forms of dyspepsia and debility. From the fruit as well as the succulent calyx, a drink useful in biliousness is prepared by boiling it with water and adding a little salt, pepper, asafoetida and molasses. In France an astringent *syrup* is made with it. For convalescence and in mild cases of fever it forms an acid refreshing drink. The *leaves* which are regarded as emollient are often cooked like vegetables and used in curries.

442. Hibiscus Tiliaceus (*Eng.*—Corkwood. *Fr.*—Bois de flot. *Ben*—Bola; Chelwa. *Uriya.*—Bama; Baria. *Mah.* & *Bom.*—Belpata. *Mal.*—Parutti. *Cing.*—Belipatta) is found on the Eastern and Western coasts and in Bengal and North West Himalayas. This *plant* is employed medicinally on account of its mucilaginous

properties. The *root* is employed in the preparation of an embrocation. It is also used as a febrifuge.

Hingtsha Repens.--See Enbydra fluctuans.

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443. HOLARRHENA ANTIDYSENTERICA; H. Pubescens; Chenomorha Antidysenterica.
(*N.O.*—APOCYNACEAE.)

Sans.--Kutaja; Kalinga; Vatsika; Girimallika; Sakrasakan. *Eng*.—The Kurchi, Conessi or Tellicherry Bark. *Fr*.—Ecoree. de codagapala. *Hind*. & *Ben*.—Kurchi; Kureya. *Gus*.—Indrajavanu. *Mah*. & *Kon*.—Kuda (*dhavo*) *Bom*.—Pandhrakura. *Tel*.--Kakakodise; Indravrakshamu. *Tam*.—Veppalai. *Can*.—Korasigina-gida. *Arab*.—Lisan-el-asafir-el-murr. *Pers*.—Zaban-i-gungishk-i-talk; Indar-javitalkh) *Port*.—Curo; Cura. (The seeds).—*Sans*.—Indrayava. *Hind*. & *Ben*.—Indrajab; Tita-indrajao. *Bom*.—Kurva-indrajao. *Tam*.—Kuluppalai-virai. (Three Apocynaceous plants are frequently called *kura, koda* or *kuda* in vernaculars.—H. Antidysenterica, Wrightia Tomentosa and Wrightia Tinctoria which is fraudulently substituted for the genuine Kurchi bark.)

Habitat.—This small tree is common in the forests of India, indigenous to the tropical Himalaya. There are two varieties.—The white and the black one.

Parts Used.—The bark and seeds.

Constituents.—The bark and seeds contain a nonoxygenated alkaloid—Wrightine or Conessine or Kurchisine and Holarrhenine. Wrightine or Conessine is an amorphous powder soluble in water and alcohol and in dilute acids. Holarrhenine crystallises from ethyl acetate in silky needles is insoluble in alcohol or chloroform. Kurchicine is a

white crystalline substance; it is bitter in taste and is best given in powder.

Action.--The bark is bitter, stomachic, astringent antidysenteric, febrifuge, and anthelmintic. The seeds are in addition carminative and also antiperiodic in combination with other antiperiodics like Cocculus cordifolius. Arabic and Persian writers consider the seeds to be lithontriptic, tonic and aphrodisiac.

Preparations.—Decoction and Infusion (1 in 10), dose.-1 to 3 ounces. Tincture (1 in 8), dose.—½ to 2 drachms. Powder, dose.-- ½ to 1 drachm. Solid and Liquid Extracts.--*Kurchicine*, dose.--2 to 5 grains. Liquid Extract, dose.--1 to 2 drachms.

Uses.—The Central Indigenous Drugs Committee Report of Calcutta, states "Before the discovery of the efficacy of ipecacuanha in this disease *i. e.*, dysentery, many chronic cases which did not get well under European medical treatment used to be cured by the Kabirajes by their preparations of this bark. Cases have also occurred of its having succeeded as a remedy in that complaint when ipecacuanha and other medicines failed." A liquid extract of the bark was distributed among many Doctors (European and Indian) in Bengal for using it and testing its efficacy in the treatment of dysentery. Almost all of them are unanimous in testifying to the marvellous good effect of the drug in dysentery acute and chronic, and also to its antipyretic effect to some extent. The *bark* of the stem and root, preferably of the young plants and the *seeds*, are generally used as remedies in acute and chronic diarrhoea and dysentery. The seeds are given in powder in 30 to 60 grain-doses mixed with sugarcandy, 1 drachm.

A *fluid extract of the bark* with the addition of ginger and *atis* is recommended in Chakradatta and according to Sharangdhara the *expressed juice* of the bark is given with honey. The *seeds* enter into the composition of many prescriptions for fever, bowel-complaints, piles, intestinal worms etc. The following recommended in Sharangdhara are a few illustrations:—(*a*) Take of *Indrayava* seeds and the tubers of Cyperus rotundus (*mustaka*), each four tolas, rub them into a paste with water and boil in one seer of water, till the latter is reduced to one-fourth. This boiled emulsion is given in doses of about half to one ounce with honey. (*b*) A decoction of *Indrayava* seeds in usual proportions is used for checking bleeding from Piles. It is given with the addition of ginger.

A decoction made by boiling 1 to 3 drachms of the seeds in 12 ounces of water till it is reduced to 4 ounces and straining, given in one dose in the mornings is most useful in chronic dysentery and in bleeding piles also. The drug is generally combined with *mocharas* and similar drugs to act beneficially in acute and chronic dysentery and diarrhoea. A compound decoction called *Kutajashtaka* is recommended in Sharangdhar. It is prepared thus.—Take of *kutaja* bark, *atis*, root of Stephania hernandifolia, flowers of Woodfordia floribunda, bark of Symplocos racemosa (*lodhra*,) root of Pavonia odorata, rind of pomegranate fruit, and the tubers of Cyperus rotundus quarter tola each, water 32 tolas; boil together till reduced to one-fourth. A hot decoction of the bark is used as a gargle in toothache. For round and thread worms, a compound anthelmintic powder is given in doses

of 15 to 20 grains twice or thrice daily for 3 days followed by castor oil. It is prepared by taking 6 tolas each of Holarrhena seeds, seeds of Butea frondosa and Embelia ribes and 2 tolas each of Cardamoms (large), long pepper, Cinnamon, Cinnamon leaves, ginger, pepper, borax bamboo manna, long pepper (Chevica Roxburghi) *Chitramulam* (root of Plumbago zeylanicum), tubers of Cyperus rotundus, black salt (vit salt), rock salt, Piper aurantiacum, Chebulic, beleric and emblic myrobalans. Other compound powders known as *Gangadhara Churnas* (*Lagu* and *Brihat*, are astringent intestinal tonics useful in acute and chronic dysentery and diarrhoea also giving tone to the intestines and increasing digestive power. *Lagu Gangadhara Churna.*—Seeds of Holarrhena antidysenterica, Cyperus rotundus, Aegle marmelos, bark of Simplocos racemosa, gum of Bombax malabaricum and flowers of Woodfordia floribunda, all in equal parts, powder and mix. Dose is 20 to 40 grains given thrice a day with whey. *Vridha or Brihat Gangadhara Churna.*—Seeds of Holarrhena antidysenterica, Cyperus rotundus, Bark of Bignonia indica, Zingiber officinale, Woodfordia floribunda, Simplocos racemosa, Andropogon muricatus Aegle marmelos, Bombax malabaricum, Cissampelos hernandifolia, Kernel of seeds of Mangifera indica, Aconitum heterophyllum, and Nymphae stellata, all in equal parts; powder and mix. Dose.—20 to 40 grains to be taken three times a day with whey. Another compound powder called *Pathadya Churna* is recommended by Chakradatta and it is made thus:—Take of the root of Stephania hernandifolia, fruit of Aegle Marmelos, plumbago root, long pepper, black pepper,

ginger, bark of Eugenia jambolana, rind of pomegranate fruit, flowers of Woodfordia floribunda, root of Picrorrhiza kurroa, *atis*, tubers of Cyperus rotundus, wood of Berberis asiatica, chiretta, seeds of Holarrhena antidysenterica, one part each, *kutaja* bark, equal in weight to all the above ingredients; powder them finely and mix. Dose—about one to two scruples to be taken with rice-water and honey. *Kutajaari*[illegible] Fermented decoction of Holarrhena antidysenterica) is a preparation used as astringent, stimulant and antiperiodic given in chronic diarrhoea, dysentery, colitis and sprue and continued fevers. Dose is ½ to 2 tolas. It is prepared by taking 12½ seers of the root-bark of Holarrhena antidysenterica, 6¼ seers of raisins, 80 tolas each of flowers of Bassia latifolia and the bark of Gmelina arborea, boiling them together in 256 seers of water till reduced to 64 seers, and strain; then add 2½ seers of the flowers of Woodfordia floribunda and 12½ seers of treacle and let the mixture ferment for a month, after which it will be ready for use. Another preparation is a compound decoction known as *Kalingakadi Kvatha*, of which the chief ingredients are the seeds of Holarrhena antidysenterica, Trichosanthes dioica and Picrorrhiza kurroa; it is useful as bitter tonic and antiperiodic, given in ½ to 1 ounce-doses twice daily, in fevers, especially those complicated with liver derangement. A *confection* called *Kutajaleha* and recommended by Chakradatta is prepared thus:—Take of kutaja bark 12½ seers, water 64 seers, boil down to 16 seers and strain. Boil the strained decoction till reduced to a thick consistence, then add sanchal salt, *Yavakshara, vit salt*, rock salt, long pepper, flowers of

Woodfordia floribunda, *indrayava* seeds and cumin seeds each 16 tolas, in fine powder, and prepare a confection. Dose is about a drachm with honey in chronic and acute dysentery. Another confection known by the name of *Pradarari Lauham* and recommended in Bhashjyaratnavali for cases of menorrhagia and other uterine discharges is prepared thus.—Take of 12½ seers of *Kutaja* bark, and prepare a fluid extract as in the preparation called *Kutajaleha*, above described. Then add the following substances in fine powder, *viz*:—gum of Bombax malabaricum, Indian madder, root of Stephania hernandifolia, *bela* fruit, tubers of Cyperus rotundus, flowers of Woodfordia floribunda, *atis*, prepared talc and iron each 8 tolas, mix them intimately and prepare a confection. Dose is about a drachm. Persian writers prescribe the seeds in powder with honey in chronic chest affections such as asthma due to worms and also in colic. An *oil* for external application called *Grahan-i mihira taila* is prepared with Sesamum oil, decoction of Holarrhena bark and a number of astringent and aromatic substances in small quantities. The bark is used also as *Lep* or plaster applied in rheumatism, and over the part of the abdomen which is most painful. They are also useful applications in pruritus, bad ulcers etc. Arabian and Persian writers recommend *pessaries* made of the *Indrayava* seeds, honey and saffron; they are supposed to favour conception. They are also used after delivery to give tone to the soft parts. The following are a few additional useful home remedies.—

(1) Take of seeds of Holarrhena antidysenterica 5, Cyperus Rotundus 4, Symplocos racemosa, (Lodh-

ra) 5, Bael fruit 5, Bombax malabaricum. (Bamboo manna) 3, flowers of Grislea Tomentosa 4 parts. Mix and maka a powder.—Dose ½ dr. Used in bowel complaints and dysentery.

(2) Take of the bark of Holarrhena antidysenterica 2 drs. Bael fruit 2 drs., Pomegranate bark (dried) 1 dr. Rub them together into a fine powder. Dose.—20 to 40 grains. Vehicle.—Honey or syrup. Used in diarrhoea and advanced stages of dysentery.

(3) Take of the bark of Holarrhena antidysenterica 5 and Sugar 5 parts. Mix and boil with water till reduced to a syrupy consistence; then add Carbonate of potash (*yavakshara* 2, *Pancha lavana* (Rock salt, Common salt, *Goda lavana i. e.* sweet chloride of sodium, *Sanchal salt* & *Bida lavana* or vit salt) 2, dried slices of the root of long pepper 3, flowers of Grislea tomentosa 4, seeds of Holarrhena antidysenterica 4, and Cumin seeds 4 parts., and make a fine powder. Dose.—1 drachm. Vehicle.—Syrup. Used in acute and chronic dysentery.

(4) Take of the bark of Holarrhena antidysenterica 5. Bombax malabaricum 3, *Manjishta* (Rubia cordifolia *i e.* Indian madder) 2, Cissampelos pareira 3, Bael fruit 5, *Motha* (Cyperus Rotundus) 6, flowers of Grislea tomentosa 6, Mica 2, and. *Lahuna sara* 4 parts. Mix and make a powder. Dose.—10 to 15 grains. Used in menorrhagia and other uterine discharges.

(5) Take of Holarrhena antidysenterica seeds 5, long pepper 4, dried slices of the root of long pepper 4, Solanum jacquini 3 and Apium graveolens 4 parts. Mix and make a powder. Dose is 10 to 15 grains. Used to check vomiting, and in dyspepsia—(Khory.)

(6) "The seeds of Holarrhena antidysenterica are a never failing specific for dysentery and hemorrhoidal flux. Take of the powdered seeds ½ dr. sugarcandy 1 dr., cold water 1 ounce; to be kept for a few hours and then strained with a thin muslin cloth; the result is a white mucilaginous bitter infusion, which is to be given twice or thrice a day to an adult; for children the dose is proportionate to their age. If the infusion be prepared in large quantity. in the proportions mentioned, it will keep fresh for many days"—(Tukina.)

(7) "Another specific property of these seeds is its efficacy in jaundice. Take of powdered seeds (*Inderjav*) dr. ½, powdered root of Helleborus Niger grs. 20, pure water ozs. 3; to be boiled or made into a decoction, and either Sulphate of Magnesia drs. 2 to 4 or Sulphate of Soda drs. 2 to 4 to be added when cool; this decoction is to be given early in the morning for 3 days at least to patients suffering from jaundice caused by portal congestion, obstruction and inflammation of the gall-ducts, worms. cold, etc. With the above decoction can be given during the day a

simple mixture of taraxacum and ammonium chloride."—(Tukina).

Holopiera Villosa—See Cocculus Villosus.

444. Holoptelia Integrifolia (*Hind.*—Papri. *Mah.*—Vavala. *Tel.*—Navili. *Tam.*—Aya. *Can.*—Rasbija) is a tree of the genus Urticaceae extending from the lower Himalayas to Travancore, the mucilaginous *bark* of which is boiled and the *juice* squeezed out and applied to rheumatic swellings; the exhausted bark is then powdered and applied over the parts covered by the sticky juice.

445. Holostemma Rheedii or Asclepias Annularis is a species of Asclepiadeae (*Bom.*—Dudurli; Tultuli; Sidori. *Santal.*—Apung; Merourak. *Tam.*—Palay kirai *Tel.*—Palakura; Istarakura) found in the tropical Himalaya from Sirmoor to Sikkim, Deccan, from the Circars and Canara southwards. The *roots* are considered cooling and alterative. In diabetes the root rubbed to a *paste* is given in cold milk. *Externally* the paste is used as an application to the eyes in ophthalmia. In spermatorrhoea the *dried root* with an equal quantity of the root of Eriodendron anfractuosum powdered is given in doses of $1\frac{1}{2}$ drachms with milk and sugar twice daily. The *decoction of roots* is used as a remedy for scalding in gonorrhoea, and also for coughs. Externally it is used as an application for orchitis. The twin *pods* form the favourite vegetable of the Hindus. The central portion of the *flowers* is sweet and eaten.

446. Hopea Odorata is one of the Coromandel plants belonging to Dipterocarpeae; it yields a fragrant *resin* which reduced to powder, forms a popular styptic

amongst the Burmese; its action is probably purely mechanical.

Hopea Racemosa.—See Styrax Benzoin.

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447. HORDEUM VULGARE; H. Decorticatum; H. Distichon; H. Hexactichon.

(*N. O.*—GRAMINEAE.)

Sans.—Yava. *Eng*:—Barley. *Fr*:—Orge anguleuse. *Ger*:—Sechszeilige Gerste. *Pers*:—Jao. *Tel*:—Pachcha yavulu. *Tam*:—Barlhi arisi. *Mah. Kon.* and *Guz.*—Bajri. *Can*:—Jave-Godi. *Hind*—Jave. *Ben*—Jab.

Habitat:—This cereal is largely cultivated in several varieties in each of the provinces of India. H. Decorticatum is grown in Great Britain and Europe.

Parts Used:—The dried decorticated grain called pearl barley and the seeds of *Yava*.

Constituents:—Fixed oil or fat, starch, proteid compound (gluten albumin), cellulose, other nitrogenous principles and ash containing silicic acid, phosphoric acid, iron and lime. Fixed oil or fat contains glycerine mixed with palmitic and lauric acids. Hypoxanthine (Sarcine) is found to occur in this cereal.

Action:—Java is a nutritious food. The seed or grain is demulcent.

Uses:—Barley imported from Europe is specially suitable as invalid's food. The *decoction of barley* (made by boiling $2\frac{1}{2}$ ounces of pearl barley or a tablespoonful of the powder in 4 pints of water down to 2 pints and strained) though containing only a little over a $\frac{1}{2}$ per cent of nutriment, is an agreeable demulcent in affections of the mucous

membranes, in catarrhs of throat and urinary tract and an excellent diluent drink in fevers. It may be rendered more pleasant and useful as a fever drink by the addition of sugar and a little of lemon juice and straining. If milk is added lemon juice should not be added. If a laxative is required the *compound decoction*, prepared as follows, may be given :—Sliced figs and stoned raisins, of each $2\frac{1}{2}$ ounces; bruised liquorice root 4 drachms, water 1 pint; barley water as above, 2 pints; boil down to a quart and strain. For cases of irritation of bladder the demulcent properties of either of the above formulas may be increased by the addition of an ounce of gum arabic to each pint of the liquor. As a food for infants brought up by hand, simple barley water and milk, in equal proportions sweetened with a little refined sugar, has been recommended; care should be taken to stop it if the bowels should become relaxed. A *barley pudding* good for invalids may be made as follows :—Add to four table-spoonfuls of Prepared Barley powder sufficient cold milk to form a thin paste, pour on it a quart of boiling milk, then add a little of butter, a table-spoonful of powdered lump sugar, sufficient lemon peel to flavour it, and two eggs previously well beaten up; mix well and let the whole bake for an hour and a half in a slow oven. This is very nutritious and easy of digestion; it may be rendered more palatable by the addition of a slice or two of lemon. The partially germinated and dried grain is the source of malt extract which is more nutritious than the unmalted barley. Malt extract consists chiefly of dextrin and malt sugar (maltose) and contains the ferment diastase which is developed during

the malting process and which possesses the power of converting starch into dextrin and sugar, thus assisting in the digestion of starchy or farinaceous foods. It is a valuable vehicle for other medicines especially cod-liver oil, with which it forms a palatable combination. *Java* or *Yava* is used as food by the poorer classes; medicinally it is also used as *Conjee*. The decoction of the seeds is a bitter tonic and astringent.

448. **Hugonia Mystax** is a rambling leafy tomentose climbing shrub belonging to Lineae (*Tam.*—Motirakanni. *Tel.*—Vendapa; Kakvire. *Mal.*—Moderakanni. *Cing.*—Maha-getiya. *Kon.*—Padava kani) found in Western Peninsula from the Concan to Travancore and Ceylon. The *bruised roots* are employed *externally* in reducing inflammatory tumours and as an antidote to snake bites. In the form of a *powder* it is administered internally as an anthelmintic and febrifuge. The *bark of the root* is also employed as an antidote to poison —(Watt).

449. **Hydnocarpus Alpina** is a Niligiri species of Chaulmugra. The seeds are smaller than those from other varieties. The seeds when cold and hot pressed were found to give proportions of oil as follows,—Cold: Hot—12: 1. The oil had a deep green fluorescence but after treatment with animal charcoal, it was light yellow in colour and possessed the usual smell of chaulmugra oil.

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450. HYDNOCARPUS INEBRIANS; H. Wightiana

(*N.O.*—Bixineae or Pangiaceae.)

Sans.—Tuvaraka; Kushtavairi. *Eng.*—Jangli almond. *Pers. & Hind.*—Chaulmoogra. *Mah.*—Kadu kawata; Kowtee. *Tam. & Mal.*—Niradimuttu. *Tel.*—Niredi vittulu. *Cing.*—Makulu; Ratakakuna.

Habitat.—Western Peninsula, Concan, along the coast-range, Malabar and Ceylon.

Parts Used—Seeds and oil. The seeds are smaller than those of the Gynocardia Odorata and of Taraktogenos Kurzii.

Constituents.—The seeds contain about 44 p. c. of the fixed oil, which contains chaulmugric and hydnocarpic acids with a small proportion of palmitic acid; both acids are crystalline.

Action.—Alterative, stimulant and parasiticide. The seeds are detergent.

Uses.—The *oil* is considered as a specific for leprosy and superior to chaulmugra oil derived from the seeds of Gynocardia Odorata and Taraktogenos Kurzii. Dose is 5 minims gradually increased to 30 minims. It is also used in intramuscular or intravenous injection for leprosy. "The best results are obtained by intramuscular injections of the ethyl esters or intravenous injections of the salts—chaulmugric and hydnocarpic acid. It results in destruction of the lepra Bacilli and the nodules"—(Chakravarthy).

Dr M.C. Koman gives in the Madras Report on Indigenous Drugs recently published, an account of even chronic cases of leprosy (in various stages and varieties of the disease—anaesthetic, mixed, tubercular or nodular, ulcerating etc.), considerably benefitted by the administration of this oil *internally* and *subcutaneously* (intramuscular injection of a mixture of 5 drops of the oil with an equal quantity of python's fat, daily increased by one drop until 30 to 40 drops were administered). Some were given also a confection prepared by grinding the kernel of

the seeds with cocoanut kernel, ginger and jaggery. The oil was given in 10 drop-doses, an hour before breakfast and the confection in 20 grain-doses in the evening. This treatment was invariably preceded by a preliminary purgation by purified powdered croton seeds for 8 to 10 days. In addition to the above treatment, some were given twice a week subcutaneous injections of solution of *sodium hydnocarpate* (2 c. c.). He concludes his note on the drug thus :—"From what I have seen I have no doubt that Hydnocarpus inebrians is a potent drug for ameliorating the loathesome complications of leprosy". Dr. Sudhamoy Ghosh the research Scientist of Calcutta states (Indian Journal of Medical Research -Oct. 1920) that the sodium salt of hydnocarpic acid "was found to be most efficacious and convenient for use in the treatment of leprosy". He says that the oils from H. Wightiana and H. Venenata are much cheaper than the oil from Taraktogenos Kurzii, whilst they contain a larger percentage of hydnocarpic acid *i. e.* about 10 p. c., as compared with 5. 5 p. c., and therefore the former are more economical to use in place of the oil from T. Kurzii for leprosy treatment. With lime water the oil is used as a *liniment* for external application not only to leprous ulcerations, but also to rheumatic joints and for scurf on the head. With *alkaline ashes* it is applied to abscesses, sore eyes and wounds infected with maggots ; also as a stimulant dressing for phegedenic and other foul sores. The oil is rubbed in phthisis, on scaly eruptions, on scrofulous nodules, in obstinate skin-diseases such as scabies, lichen, prurigo and those of syphilitic origin. For itch the oil beaten up with the kernels and shells

of castor seeds is applied. The oil is a remedy for *Barsati* in horses. The seeds are used externally in the form of *emulsion* or *paste* mixed with an equal quantity of Jatropha curcus oil, sulphur 2 parts, camphor ½ and lime juice 10 parts. An *infusion* of the seeds is used as an *injection* in gonorrhoea, as a vaginal wash in foetid discharges, especially after delivery. Standard Sanskrit works, especially Susruta states that the efficacy of chaulmugra oil in leprosy is enhanced by taking with it a decoction of catechu. If so chaulmugric acid may be tried in combination with *catechol* the active principle of catechu, since pyrogallol which is very much allied to catechol is said to have been used by Unna in the form of an oxide with marked success in leprosy. Under the Ayurvedic treatment of leprosy, both chaulmugra oil and cow's urine are prescribed for internal as well as external use. As the Scientist J. C. Ghosh states it is very likely that the acids of the oil coming in contact with the sodium and ammonium salts of urine, some alkaline salts are formed and these salts being soluble they will readily diffuse through the patient's blood, and act as if a soluble salt of chaulmugra acids were administered to the patient.

Hydnocarpus Kurzii—See Taraktogenos Kurzii.

451. **Hydnocarpus Odorata** is a tree found in Assam, Arakans, Burma, often together with H. Kurzii from which it is hard to distinguish. But the *oil* of its fruit, though it is often mistaken for chaulmugra has not the same therapeutic efficacy.

452 **Hydnocarpus Venenata** is known as the small chaulmugra or small kawati, occur-

ring in Burma, also in Madras and Ceylon. "The seeds when cold and hot pressed gave the following proportions of oil :—Cold : Hot : 2·0 2 : 1 The fatty acids were fractionally crystallised from alcohol when the least soluable fraction (about 9 4 per cent) consisted of almost pure Chaulmoogric acid, whilst the second fraction (about 8·7 per cent) was found to be mainly hydnocarpic acid. The sodium salt of the second fraction was found to be most suitable for injection" (in leprosy) —Dr. Sudhamoy Ghosh in the Indian Journal of Medical Research.

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453 HYDROCOTYLE ASIATICA.

(*N. O.*—Umbelliferae.)

Sans.—Brahmi. *Eng.*—Indian penny wort. *Fr.*—Bevilacque. *Ger.*—Asiatischer Wassernabel. *Hind.*—Khulakudi. *Bom.*—Karinga. *Cash.*—Brahmabuti. *Mah.*—Karivana ; undri. *Duk.*—Vallari ; Brahmamanduki. *Ben.*—Tholkuri. *Guz.*—Karbrahmi. *Arab.*—Artaniya-e-hindi. *Kon.*—Ekpanni. *Tel.*—Manduka, Bokuduchettu. *Tam.*—Vellarai. *Mal.*—Kutakam. *Can.*—Vondelaga; *Cing.*—Hingotu-kola. *Burm.*—Minkhuabin. *Malay.*—Dawoopungah-gah.

Habitat.—This small weed is common all over India, growing plentifully in moist localities.

Parts Used.—The whole plant—leaves, fruits, roots etc. The roots are the most active part.

Constituents.—An oleaginous white crystalline substance *Vellarin*, the active principle, resin and some fatty aromatic body, gum, sugar, tannin, albuminous matter, salts—mostly alkaline sulphates. Vallarin has the odour and bitter persistent taste of the fresh plant ;

it is soluble in spirit, ether, caustic ammonia and partially in hydrochloric acid.

Action.—Alterative, tonic, diuretic and local stimulant, especially of the cutaneous system. It has a special influence on the genito-urinary tract; it sets up urinary and ovarian irritation, itching over the whole body. It has also an emmenagogue action. In large doses it acts as a stupifying narcotic producing headache, giddiness and with some people a tendency to coma.

Preparations.—(1) *Powder* of the leaves, prepared as follows.—The leaves after careful separation from the plant are spread on a mat in the shade and dried by being freely exposed to the air, (not to the sun nor heat, as it takes away all its virtues). When thoroughly dried they are finely powdered and kept in well-corked or stoppered bottles. Of this powder the dose is from 3 to 5 grains thrice daily. (2) The *plaster* or *poultice* prepared from the fresh leaves bruised into a paste with *cold* water. (3) *Syrup* prepared from 90 grammes of powder, boiled in a quart of water till reduced to a pint, to which are added 2 lbs. of sugar and which are thoroughly mixed at 31 C., till a syrup is formed; dose is 1 drachm, gradually increased. (4) *Fluid extract* of the fresh plant; dose is 1 to 5 minims gradually increased to 15 minims. (5) *Ointment* (1 part of the liquid extract or of the powder in 8 parts of vaseline or lanoline). (6) *Decoction* of the dried plant (1 in 20 of water). (7) *Bath* (in skin diseases).—1,500 grammes of the fresh plant added to a tubful of hot water.

Uses.—As an internal and external remedy in ulcerations, chronic and callous, scrofulous and syphilitic

with gummatous infiltration, in chronic and obstinate eczema, psoriasis, leprosy and other cutaneous affections, enlargement of glands, in abscess and in chronic rheumatism, its efficacy has been highly valued, and as a stimulant to healthy mucous secretion in infantile diarrhoea and ozoena; and in amenorrhoea it has been successfully employed. For *internal* administration, the *powder*, the *fluid extract*, and the *syrup* are suitable, and for *external* application are employed the *powder*, the *juice*, the *plaster*, the *ointment* and the *bath*. In elephantiasis of the scrotum, legs etc., and affections of the cellular tissues, over bruises, inflamed and swollen parts, over rheumatic swellings, the *ointment* or the *juice* extracted from the plant is an external application, while internally the liquid 1 to 5 drops thrice daily, will check the fever associated with these affections. For leprous, scrofulous and syphilitic affections and ulcerations, the *powder*, in 3 to 5 grain doses, may be given thrice daily; at the same time some of the powder may be sprinkled on the ulcers or preferably *poultices* of the fresh leaves may be applied. As for leprosy the patient under its use, in the course of a few weeks, improves in all respects. If, after continuing its use for some time, it causes great itching of the skin over the body; it should then be discontinued for a week, aperients administered and the medicine recommenced. "The administration of this drug to lepers causes at first a sensation of warmth and pricking in the skin, especially of the hands and feet; this is followed after a few days by a general sensation of warmth, sometimes almost unbearable; the capillary circulation is accelerated and after about a week

the appetite improves and in time the skin becomes softer, throws off the thickened epidermis and recovers its transpiratory function"—(Daruty—Dymock.) For the dysenteric and other bowel complaints of children 3 to 4 leaves are given with cumin and sugar and the pounded leaves are applied to the navel. One to two leaves are given every morning to cure stuttering. For skin, eruptions supposed to arise from heat of blood the juice is applied as a *Lep* generally combined with *cadamba* bark, ghee and black cumin. For mental weakness, for improving memory, *powder* of the dried leaves in small doses is given with milk. For diseases of the skin, blood and nervous system, among children and to cure gonorrhoea, jaundice and fevers the *fresh juice* of leaves is recommended to be given with milk and liquorice. In the bowel complaints, as well as fevers, of children the *infusion* of leaves is given with *Methi* (fenugreek seeds); dose is about half a tea-cupful. *Pills* made of this drug together with *Basil* leaves and black pepper all in equal quantities, ground into a paste and made into pills of 3 grains each, and given morning and evening are said to be very beneficial in various sorts of fevers—remittent, intermittent, continued, chronic, malarious etc. A decoction made of this plant together with sweet-flag root (Acorus calamus), chebulic myrobalan, Adhatoda vasaka, long pepper and honey in equal parts, is useful in hoarseness in phthisis. And a pill composed of this drug in 5 parts, *Kushta* (Aplotaxis auriculata) 4 parts and honey 6 parts, is useful in doses of 3 to 5 grains as a nervine tonic in insanity and hypochondriasis.

454. **Hydrocotyle Rotundifolia** (*Sans.*—Mandukaparni. *Ben.*—Gimasaka. *Hind.*—Khul-khuri. *Tam,*—

Ballarikerai) is a species common in India sometimes substituted in medicine for H. Asiatica from which it may be distinguished by its much smaller fruits.

455. **Hydrolea Zeylanica** (*Sans.*—Langali. *Ben*.—Kasschara; Isha-langulya. *Malay.*—Isjiru-vellel. *Kon.*—Keriti) is a species of Hydrophyllaceae found throughout India in wet places. The *leaves* beaten into a pulp and applied as a *poultice* are considered to have cleansing and healing effect on neglected and callous ulcers. They apparently possess some antiseptic property.

456. **Hygrophila Obovata** is a species belonging to Acanthaceae (*Hind*.—Kouyadori. *Ben.*—Kaknasa) found in tropical India and the East Indies, the leaves of which are used to reduce œdematous swellings.

457. **Hygrophila Ringens** is a species found in Malabar where the leaves are used together with salt as a depurative.

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458. HYGROPHILA SPINOSA; H. Longifolia; Astercantha Longifolia.

(*N. O.*—ACANTHACEAE.)

Sans.—Kolistha; Kokilaksha; Ikshugandha. *Ger.*—Langblattriger Sterndorn. *Hind. Punj.*, & *Cash.*—(the seeds) Talamakhana. *Guz.*—Ekharo. *Mah.*—Kolsunda. *Ben.*—Kantakolika; Kuliakhara. *Duk.*—Kolsi. *Tel.*—Neerugobbi. *Tam.*—Neerumulli. *Can.*—Kolavalike. *Mal.*—Vayalchulli. *Cing.*—Ikkiri, *Burm.*—Soopadan.

Habitat.—This little annual plant is common in moist places on the banks of tanks, ditches etc., throughout India and Ceylon. The seeds (*Talmakhana*) and the root in the dried state are easily obtainable in the bazaars.

Parts Used.—The plant—seeds, root and ashes of the plant.

Constituents.—The roots are found to contain an alkaloidal principle named *Cholesterol*. The seeds are glutinous and mucilaginous. They contain nitrogen 5 p. c. which is equivalent to 31 p. c. of albuminoids, traces of an alkaloid and 23 p. c. of a yellow fixed oil.

Action.—The root is a cooling bitter tonic, diuretic, demulcent and refrigerant. The seeds are diuretic and aphrodisiac. The leaves are demulcent and diuretic. The ashes of the plant are diuretic.

Preparations.—Decoction of the root and Infusion of the plant, dose;—½ to 1⅓ ounces. Dose of seeds—½ to 2 drs. Ashes of the plant, dose—½ dr. Acetum, dose;—½ to 1 ounce.

Uses.—The *root* is employed in the form of decoction (1 in 20) in rheumatism, in gravel, gonorrhoea and other diseases of the genito-urinary tract and in hepatic obstruction with dropsy *i. e.* jaundice and anasarca. The *leaves* and *seeds* are also useful in jaundice and anasarca. *Acetum* made by macerating 2 ounces of freshly dried leaves for 3 days in 16 ounces of distilled vinegar, then pressing and straining is a very useful preparation, given in doses of ½ to 1½ ounces. An *infusion* of the leaves (1 in 10) macerated for 3 days and strained is also useful. The *ashes of the plant* are also used in dropsy and gravel. Tincture of the whole plant (1 in 3 of alcohol) in doses of 20 to 30 minims, three times daily was found beneficial in urinary affections, particularly dysuria and painful micturition. The seeds are given by Hakims with "sugar, milk or wine in doses of one to three dirhems" for impotence. Combined with *Gokhru* (Tribulus terrestris) and *Musli* (Asparagus adsendens), the

seeds are given in *powder*, with cow's milk and sugar for general debility. A *confection* of the seeds containing a large number of aphrodisiac, demulcent, nutritious and aromatic stimulant substances has been in use for impotence, seminal and other debilities. For asthmatic complaints a powder of the *Talamkhana* seeds is recommended to be given in a mixture of honey and ghee. For diarrhoea the *seeds* ground into a *paste* and given in buttermilk or whey prove very beneficial. The following preparation has been recommended for leucorrhoea in AKSIR-UL-IMRAZ.—Take of *Talamkhana* (seeds), *Kamarkas*, *Bijabanda*, *Mocharas* (Gum of Bombax Malabaricum), *Balchharra* (Nardostachys Jatamansi), *Mustaki* (Pistachia Terebinthes) and *Khaskhas* (Poppy seeds) in equal parts, and ten *mashas* (2 drachms) each of *Musli shia* (Curculigo Orchioides) and *Ral* (Pitch of Shorea Robusta) and one tuber of *Saleb misri* (Salep); pound and make a powder; dose is 5 to 9 *mashas* (1 to 1½ drachms), with cow's milk.

Hygrophila Terrestris—See Tribulus Terrestris.

459. **Hyoscyamus Muticus** or H. Insanus is a plant of Solanaceae found in Afghanistan, West Punjab, Sind and Baluchistan where it is known by the name of *Kohibung* or Mountain hemp. It is a powerful poison. It is smoked in small quantities by Faquirs and used also for criminal purposes. The chief symptoms produced by it are dryness and constriction of the throat and furious delirium. The alkaloid in this is chiefly, if not entirely hyoscyamine, which possesses mydriatic properties and which can be easily isolated.

460. HYOSCYAMUS NIGER; H. Aureus; H. Reticularis.

(*N. O.*—SOLANACEAE.)

San.—Parasikayaman, *Eng.*—Henbane. *Fr.*—Jusquiame noire. *Gr.*—Afiyum. *Hind. Ben.* & *Guz.*—Kurasani-ajowan. *Tel.*—Kurasani-yamani. *Tam*—Kurasani-omum. (seeds). *Hind.* & *Ben.*—Buzrool. *Arab.*—Bazri-ula banja. *Cash.*—Bagarbhang; Iskiras. *Moor.*—Katfit. *Syria.*—Ajmalus.

Habitat.—Grows wild throughout the Himalayan range at altitudes of 8,000 to 11,000 feet. H. Reticularis is with black seeds and purple flowers. H. Albus has white seeds; this is preferred by medical men.

Parts Used.—The dried and the fresh leaves, flowering tops, and flowers with the branches.

Constituents.—The leaves contain hyoscyamine, hyoscine, scopolamine, hyosciprin, cholin, fatty oil, mucilage, albumen and potassium nitrate 2 p. c. The seeds contain hyoscyamine, a fixed or fatty oil 25 p. c. an empyreumatic oil (obtained by destructive distillation) and ash 4 to 5 p. c. Hyoscyamine is isomeric with atropine; it may be split up into hyoscine and hyoscinic acid. Hyoscine is a volatile oily liquid about 5 times more powerful therapeutically than hyoscyamine.

Action.—The seeds are intoxicating, narcotic, anodyne, digestive, astringent and anthelmintic. The leaves and Hyoscyamine are sedative, anodyne, antispasmodic, stimulant and mydriatic in effect. Their effect as deliriant are milder than those of belladonna, but greater as hypnotic, and more reliable and rapid, and preferable to morphia and chloral.

Preparations.—Powder of the leaves, dose—5 to 10 grains; Fresh juice expressed and preserved, dose is from

½ to 1 drachm; Tincture of the dried herb, dose ¼ to 1 drachm; Extract of the fresh plant (the most common form of administration), the dose is from 1 to 3 grains; Hyoscine and Hyoscyamine, the dose is from $\frac{1}{200}$ to $\frac{1}{100}$ grain (hypodermically). There are also cataplasms, plasters and oil of hyoscyamus intended for external applications. In over-doses hyoscyamus is a narcotic poison, producing delirium, coma and death, and its operation is generally very rapid.

Uses.—Of cultivated henbanes the second year's growth of the biennial plant has usually been preferred. Hyoscyamus is largely prescribed in mental, and maniacal excitement, epileptic mania, chronic dementia with insomnia, paralysis agitans, convulsions, neuralgia, hypochondriasis, functional palpitations, spasmodic cough, asthma, hiccup, laryngismus, in urinary affections as irritation of the kidneys, ureters and bladder, tetanus, locomotar ataxy, mercurial palsy and hysteria. It has a peculiarly sedative effect particularly beneficial in irritable affections of the lungs, bowels, and genito-urinary organs such as cystitis etc. A *paste* of the leaves with flour is made into small *cakes* which when dry retain their medicinal properties for sometime. A *poultice* of the juice with barley flour is applied to relieve pain of inflammatory swellings. A *paste* of the seeds in wine or brandy is applied to gouty enlargements, inflamed breasts and swollen testicles. A *powder* made of ½ drachm of henbane seeds and 1 drachm of poppy seeds is given with honey and water in coughs, asthma, gout & hiccup. A mixture of the powdered seeds with pitch is used for stuffing the hollows of painful teeth;

it is used also as a *pessary* in painful affections of the uterus. A *paste* made of *Makangini*, (*Buch*, henbane seeds, *Khulanjan* (Alpinia galanga) and *pipli* (long pepper) in equal parts, and mixed with honey, is recommended to be given for laryngitis in drachm doses twice daily (*Ilaj-ul-Gurba*). The seeds when added to cathartics prevent griping. As a stomachic they are given with carminatives and aromatics in worm complaints, colic, and dyspepsia. The seeds made into a *paste* with mare's milk and tied up in a piece of wild bull's skin and worn by women" is said to prevent conception!

Hyperanthera Moringa—See Moringa Pterygosperma.

461. **Hypericum Perforatum.** is a plant of Hypericinae (*Eng.*—Hypericon. *Pers.*—Hyufarikum. *Arab.*—Dadi; Jau i jadu. *Hind.* & *Punj.*—Balsunt; Dendlu) growing on temperate Western Himalaya from Kumaon to Cashmere. The plant is astringent, aromatic and a mild purgative. The leaves are used as a vermifuge. The herb is also recommended as a "detursive, resolutive, anthelmintic, diuretic and emmenagogue and externally as excitant"—(Watt). The flowers contain a red resin (hypericum red) volatile oil and a red colouring matter. The oil in which the shoots or flowering tops have been steeped is sold as "Oleum hyperial". The leaves are used to cure piles, prolapsus of uterus and of anus.

Hypoxis Brevifolia & Hypoxis Orchioides—See Curculigo Orchioides.

462 **Hyssopus Officinalis** belonging to **Labiatae** (*Arab.* & *Pers.*—Zufah yabis. *Hind.*—Zupha) is me

with on the Western Himalaya from Cashmere to Kumaon. The *leaves* are regarded as stimulant, stomachic, expectorant, diaphoretic, emmenagogue and carminative; the *infusion* or *syrup* of leaves is useful in hysteria and colic, coughs, asthma, sorethroat and chronic bronchitis; also in uterine affections as amenorrhoea and indurations of the liver and spleen. The *sap* of the leaves made into a *syrup* with sugar and honey is used as a vermifuge for round worm. A compound syrup of this drug together with several carminative, anodyne and demulcent substances is given in dyspepsia, flatulence, asthma, chronic bronchitis, amenorrhoea, rheumatism and influenza.

463. **Ichnocarpus Frutescens** or Apocymene frutescens or Echiles Frutescens, (*Eng.*—Black creeper- *Sans.*—Sariva. *Hind.*—Dudhilata. *Ben.* & *Bom.*—Shamalata. *Burm.*—Tansapal. *Duk.*—Krishna sariva. *Mah.* & *Kon.*—Kantebhouri. *Can.*—Kareambu ; Gouriballi. *Tel.*—Nellatiga *Mal.*—Palvalli) belonging to Apocynaceae, is a climbing plant found throughout India. The *root* is alterative tonic, diuretic and diaphoretic like Indian Sarsaparilla. It contains an acid allied to Cinchotannic acid, a red colouring matter, resin, a small quantity of Coumarin and a Caoutchouc-like substance. No alkaloid is detected. The *stalk* and *leaves* in decoction (1 in 10) is used like country Sarsaparilla in doses of 1 to 4 drachms in the treatment of skin eruptions; useful also in simple fever. A decoction of the roots of colocynth, *Anantamul*, *Sariva* and Hedyotis biflora (*parpata*) prepared in the usual way is administered with the addition of powdered long pepper and

bdellium in chronic skin-diseases, syphilis, elephantiasis. loss of sensation and hemiplegia.—(Sharangadhara).

464. Illicium Verum (*Eng.*—Staranise. *Hind*—Anasphal, *Bom.*—Badian. *Tel.*—Anasa-purvem. *Tam.*—Anasuppan. *Arab.*—Raziyanje-khatai. *Pers.*—Badian-i-Khatai) is a plant of Magnoliaceae, indigenous to Cochin China from where the fruit is imported. The star-anisi *fruit* contains a volatile oil (obtained by boiling it with water) 4 to 5 p. c., sugar, a bitter principle and tannin in various proportions. It is aromatic, carminative, stomachic, stimulant, diuretic and expectorant; it is best given in the form of *infusion*. It is specially suitable for children in doses of ½ to 1 drachm as carminative. With tea it is given in flatulence and spasmodic affections of the bowels. It is also used as an adjunct to cough mixture and as a spice with food. The *oil* is applied to the abdomen of children to relieve colicy pains, to the joints in rheumatism, and around the ear, in otalgia or pain in the ear. Dose of the oil for internal administration is ½ to 3 drops. The following decoction is recommended for Hemiplegia and facial paralysis in **Ilaj-ul-Gurba**:—Take of *Badian* 6 *mashas* (70 grains), *Baikh Badian* (*root*) 1 tola, seeds of Soya and *Ajwan-ajmodha* each 3 *mashas*, *Balchirh* (Nardostachys Jatamansi) 4 *mashas*, *Baikh kasni* (Chicory root) 1 tola, *Gulkhand* 2 tolas. Make a decoction in 6 *chataks* of water.

465. Indigofera Angustifolia (*Sans.*—Nilini. *Ben.*—Nila, *Fr.*—Indigotier a feuilles etroites) is a straight-leaved species of Leguminoseae found in Bengal yielding indigo. Its *root* is used as a bitter tonic and febrifuge.

466. Indigofera Argentea or I. Articulata

(*Fr.*—Indigotier argente. *Ger.*—Agyptische Indigop flanze) is a white coloured species found in Egypt, Arabia, Bengal and East Indies. The *roots* and *leaves* are used as bitter tonic, and in calculous affections. In Egypt the *seeds* are used as vermifuge.

467. Indigofera Aspalathoides (*Tam.*—Shivanarvembu, *Can.*—Shivamalli-gida, Neelamalligida, *Mal.*—Manali) belonging to Leguminosæ is a plant commonly met with in South India, mostly growing on waste and barren grounds. Its *leaves, flowers* and *tender shoots* are employed in decoction as a cooling and demulcent drink and in elephantiasis, leprosy and cancer and as an alterative in secondary syphilis &c. The *root* is chewed as a remedy for toothache and aphthae. The *whole plant* rubbed with butter is applied to reduce œdematous tumours. A preparation is made from the ashes of the burnt plant which is used to clean dandruff from the hair. The leaves are applied to abscesses and an *oil* is got from the root and is used to anoint the head in erysipelas. This is one of the important ingredients of the specific oil for syphilitic and other skin diseases.

468 Indigofera Caerulea (*Sans.*—Nilika. *Fr.*—Indigotier blue) is a species found in Bengal yielding a light-blue indigo in large quantity.

469. Indigofera Enneaphylla (*Sans.*—Vasuka. *Fr.*—Indigotier a neuf feuilles. *Ger.*—Neunblattrige Indigopflanze. *Mah.*—Bhuiguli. *Tel.*—Cherragaddamu. *Tam.*—Adambedi; Cheppu neringie. *Can.*—Kennegilu-*Mal.*—Cheru-pullate) a species distinguished by nine leaves, is found throughout the plains of India. Its *juice* is given as an alterative in old venereal affections. It is also antiscorbutic, and the *infusion* of the plant is given

as a diuretic in fevers. *Pills* made of the *leaves* are useful in 5 grain-doses in cases of Marasmus.

470. **Indigofera Frutescens** is another species found in Bengal and East Indies. Its decoction is given in calculus.

471. **Indigofera Glabra** (*Fr.*—Indigotier glabre) is a smooth and hairless species found in Bengal where the *root* is used for calculous affections, *leaves* as a bitter tonic and febrifuge and externally as an emollient application.

472. **Indigofera Hirsuta** (*Fr.*—Indigotier velu) is found in Bengal and East Indies, distinguished by a hairy coating. Its decoction is given in cerebral disorders.

473. **Indigofera Paucifolia** (*Tam.*—Kuttukkar-chammathi) a wild species with few leaves is found in the plains in Sind and the upper Gangetic basin. It is used in decoction (1 in 10) as an antidote to poisons; dose is 1 to 2 ozs; the *root* boiled in milk is used as a purgative and the *stem* in decoction, is used to foment the joints in periostitis and also given internally. It is used as a gargle in mercurial salivation.

474. **Indigofera Pulchella** (*Hind.*—Sakena. *Santal.*—Libi-bichi; Dare-huter. *Mal.*—Baroli. *Kon.* & *Mahableshwar.*—Chimnati; Nirda) is a species found throughout the Himalayan tract and the hills of India. A decoction of the *root* is given by Santals for cough and a powder of the same is applied externally for pains in the chest.

475. INDIGOFERA TINCTORIA; I. Indica; I. Anil; I. Sumatrana.

(*N.O.*—LEGUMINOSAE.)

Sans.—Neela; Neelinee. *Eng.*—True Indigo; Dyer's Indigo. *Fr.*—Indigotier des teinturiers. *Ger.*—Farbe-Indigop-flanze. *Hind. Sind.* & *Ben.*—Nil. *Guz*—Gali. *Mah.*—Nila. *Tel, Kon.* & *Can.*—Neeli. *Tam.*—Nilam. *Pers.* Daorokhat-e-nila; *Mal.*—Amari; Avari. *Arab.*—Nilaja, Nabatuna milaja.

Habitat.—This small erect shrub is cultivated extensively in India, especially in Bengal, Sind, Oudh, Madras & Bombay.

Parts Used.—The plant and the expressed juice—Indigo.

Constituents.—Indican (a glucoside) the oxidized form of *Luc-indigo* or Indigo-white, the product obtained from the fermentation of the fresh green plant. The oxidized product—chiefly indigotin or Indigo-blue which settles to the bottom is collected, washed and pressed into cakes of 3 to 3½ inches square and finally dried. The yield of indigo is as much as 50 p. c. Indigotin is insoluble in water, alcohol and dilute acids; it is soluble in strong sulphuric acid forming sulphate of indigo called "extract of Indigo."

Action.—The plant is stimulant, alterative deobstruent and purgative. Indigo is antiseptic and astringent.

Uses.—The plant yields a valuable dye-stuff called indigo. The *juice of the leaves* of the plant and *indigo in powder* have been used mixed with honey in enlargement of the liver and spleen, epilepsy and other nervous affections. In hydrophobia two ounces of fresh juice with an equal quantity of milk is given in the morning

for 3 days, as a prophylactic; it might produce slight headache and nothing beyond it. In larger doses it causes purging. The juice is also applied to the part bitten or the leaves bruised are applied as poultice. The juice is also given in asthma, whooping cough, palpitation of the heart, in some lung diseases and kidney complaints as in dropsy. The *decoction of the root* is given in calculus; the *root* boiled in milk and the *stem in decoction* are useful both internally and externally like those of I. Paucifolia. The juice of the young branches mixed with honey is a useful application for aphthæ of the mouth in children. An *infusion of the root* is given as an antidote in cases of poisoning by arsenic—(Watt). *Externally* the leaves crushed are used as stimulant *poultice* or *plaster* in various skin affections, to hæmorrhoids etc., and to cleanse and heal wounds and ulcers. *Powdered indigo* also is used for sprinkling on ulcers. Indigo is applied to reduce swellings in the body, to the bites and stings of venomous insects and reptiles, and also as soothing application to burns and scalds. It is applied mixed with castor oil to the navel of children to promote the action of the bowels and mixed with warm water to the pubes and hypogastrium as it is said to stimulate bladder and therefore useful in cases of retention of urine.

476. Indigofera Trifoliata (*Guz. & Kon.*—Vekhario) is a species found in Guzerat and Ceylon. The *seeds* are alterative, astringent, aphrodisiac, tonic and restorative. They are mucilaginous. A *confection* is used in doses of 1 to 2 drachms in case of rheumatism, lumbago, general debility after delivery, seminal weakness

and leucorrhoea. A *decoction* of the seeds (1 in 10) is useful for the relief of pain in the back and waist: dose is from ½ to 1½ ounces.

Ionidicum Suffruticosum.—See Viola Suffroticosa.

477. **Ipomoea Aquatica** or I. Reptans (*Sans.*—Kalambi. *Ben.*—Kalmi sak. *Mah.*—Nalichi bhaji) is commonly used as a vegetable.

478. **Ipomoea Batatas** or I. Edulis (*Eng.*—Sweet potato. *Fr.*—Truffle douce; potate de Malaga. *Ger.*—Batate; Bataten Trichterwinde. *Hind.*—Rataulu; Mithaalu. *Guz.* & *Mah.*—Batale. *Tel.* & *Can.*—Genasu) is a species indigenous to India. Sweet potato contains a good deal of starch and sugars, but as it is very fibrous it is apt to ferment easily and provoke flatulence; but it is aperient. The red variety is more nutritious. It is made into curry, *payasam* and other edible preparations. Medicinally its paste, or the paste of its leaves is applied to scorpion bite with benefit.

479. **Ipomoea Bona-Nox** is the moon-flower. Dried capsules, seeds, flowers, leaves and root are supposed to have some virtues in snake-bites.

480. **Ipomoea Caerulea** is a species indigenous to India and well noted for their purgative seeds.

481. **Ipomoea Cymosa** (*Ben*—Sapussundu) is a species found in the islands of the Indian Ocean and the East Indies, the leaves of which are used in Moluccas as an emollient in abscesses and ulcers. In Bengal the seeds are soaked in water, which yield a mucilage which is used as an aperient, and as an alterative in cutaneous diseases. Dose of the sun dried and powdered seed is from 20 to 30 grains.

482. Ipomoea Digitata or I. Paniculata is a plant of Genus Convolvulaceae (*Sans*—Vidari; Ksheera-kanda; Vrashavalli; Bhumikushmanda; Payasvini. *Hind.*—Bilai-khand; Bidarikand. *Ben.*—Bhuin-kumra. *Mah.* *Guz.* & *Kon.*—Bhui kohala; Pattana. *Tel.*—Matta paltiga; Nelagummudu. *Tam.*—Phalmodika; Nelli-kumbala. *Mal.*—Mothalkanta; Palmodikka. *Can.*—Bujagumbala; Nela kumbala) indigenous to the hotter parts of India. The tuberous root contains a resin, sugar, and principally starch. In action it is tonic, alterative, aphrodisiac, demulcent and lactagogue. It enters into the composition of several diuretic and demulcent mixtures. The powdered root-stalk is given with wine for the purpose of increasing the secretion of milk, to children in case of emaciation, debility and want of digestive power; also in spleen and liver enlargement as a cholagogue. *Powdered* sun-dried *root* boiled in sugar and butter and administered, has the effect of promoting obesity, moderating menstrual discharge. The *powdered root* acts as mild purgative; also as cholagogue, useful in liver complaints. A *confection* made of the root and equal parts of wheat flour and barley with milk, ghee, sugar and honey is in general use as a restorative to emaciated and debilitated children. In spermatorrhoea the juice of the fresh root is given with cumin and sugar and as a lactagogue, it is combined with coriander and fenugreek seeds. The powder of the root macerated in its own juice and given with honey and ghee is recommended for use as an aphrodisiac—(Susruta). A compound decoction called *Vidarigandhadigana Quath*, consisting of Ipomoea digitata, Desmodium gangeticum, Tribulus terrestris, Asparagus racemosus, Hemidesmus indicus, Boerhavia diffusa and Solanum Indicum is given in

1 to 2 ounce-doses twice daily in fevers and bronchitis and found very beneficial. From the powder of the dried root, previously macerated 14 times in its own juice, a *paushtic* (aphrodisiac) is made by frying it in butter with equal parts of almonds, quince seeds, cloves, cardamoms, nutmegs *satavari*, *gokhru*, seed of Mucuna pruriens, *musli* etc., and making the whole into a conserve with sugar. This conserve is taken dissolved in milk in doses of ½ tola or more.

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483. IPOMOEA HEDERACEAE; I. Nil; Convolvulus Nil.

(*N.O.*—CONVULVULACEAE.)

Eng.—Pharbitis seeds. *Hind. Punj. Ben, Guz. & Mah.*—(seeds) Kala-dana. *Hind.* & *Ben.*—Mirchai. *Arab.*—Hab-un-nil. *Pers.*—Tukhm-i-nil. *Tel.*—Kolli vittulu. *Tam.*—Kodi-kakkatan virai. *Kon.* & *Mah.*—Nil-pushpi. *Can.*—Gouribija. *Punj.* & *Cash.*—Iskpecha. *U.P.*—Banura.

Habitat.—Found wild in some parts, and cultivated in several places in India.

Parts Used.—The dried seeds.

Constituents.—A thick oil 14.4 p. c., mucilage, albuminous matter, tannin, and Pharbitisin 8 p. c., an active resinous principle closely resembling the convolvulin of Jalap.

Action—Cathartic and anthelmintic. The drug is described in Makhzan-el-Adwiya as a drastic purgative and attenuant relieving the system of *pitta* and *kufa* and acting as an anthelmintic. As cathartic, the seeds are closely allied to Jalap.

Preparations.—Extract, tincture, compound powder and resin.

Uses.—The *seeds dried* and *powdered* are given as purgative in doses of from half to one drachm, either alone or as *compound powder*, combined with an equal quantity of cream of tartar and 5 to 8 grains of powdered ginger ; or a powdar containing 45 grains of *Kaladana*, 5 grains of black pepper and 10 grains of ginger is an efficient purgative producing 3 or 4 watery motions. A powder containing 20 grains of *Kaladana*, 5 grains of black pepper and 15 grains of *Atis* all finely powdered, is a useful dose for feverish attacks ; it may be given twice daily. The dose of the Extract of *Kaladana* or of the resin is from 5 to 8 grains, in the form of *pill*. Dose of the *tincture* (1 in 8) is from 2 to 3 drachms. It is a good adjunct to purgative draughts.

484. Ipomoea Muricata (*Kon.*—Barikbhauri. *Bom.*—Gariya) is met with in the Himalayan region from Kangra to Sikkim and on Deccan hills. The *seeds* are used as a substitute for those of I. Hederaceae. The *juice* of the plant is used to destroy bugs.

485. Ipomoea Pescaprae; I. Biloba; I. Brasiliensis; Convolvulus Pescaprae (*Sans.*—Chagalanghri. *Eng.*—Goat's foot creeper. *Hind.*—Dopatilatā. *Ben*—Chagalkuri. *Mah.* & *Kon.*—Maryadvelo ; Bangadivalli. *Tam.*—Adapukodi, *Tel.*—Balabandatige. *Guz.*—Ravarapatri) are species found on the coasts of India and Ceylon. They are found to contain a resin and an alkaloid, and to possess alterative, tonic and purgative properties. A *decoction* (1 in 20) *of the roots and leaves* is used in rheumatism, gout, gonorrhoea and dropsy in doses of 1 to 2 ounces. It is supposed to have the power of preventing the effects of age. The *juice* is given as diuretic in dropsy and the bruised leaves are applied to the parts. The *paste of the leaves* is

applied to boils and carbuncles. The leaves boiled in water are locally applied as *varalians* to painful joints in rheumatism and to the abdomen in colic.

486. Ipomoea Quamoclit (*Sans.*—Kamalata. *Eng.*—Cupid's flower. *Mah.*—Sitache-kes) is a species easily recognised by its filiform, pectinate leaves and small bright crimson or white flowers. It is considered to have cooling properties. The *pounded leaves* are applied to bleeding piles and a tola of their *juice* with an equal quantity of ghee is administered twice a day internally. The crushed leaves are also applied as *Lep* (plaster) to carbuncles.

487. Ipomoea Reniformis. (*San.*—Mooshakarani. *Hind*-Mushakani. *Mah. Kon. & Bom.*—Underkani. *Ben*—Indurkani. *Tam.*—Paerattae-kirae. *Can*,—Valliharuhi) is found on the Nilgiris. A *decoction of the plant* (1 in 20) is said to act as deobstruent, diuretic and alterative, useful in rheumatism, neuralgia, headache etc; dose is from ½ to 1 ounce. The leaf-juice is also given, for migraine, headache etc; a *sherbet* of it is a nice remedy and it acts as purgative. The leaf-juice is also given in rat-bites and snake-bites in doses of 1 to 2 tolas. It is also locally applied to the parts bitten. It is used also for dropping into the ear in cases of ulcers, abscesses etc., In epilepsy *powder* of its leaves is sniffed up. The *paste of the root* or its powder mixed with Java flour and water is applied to swellings.

488. Ipomoea Sepiaria is found throughout India. It has a reputation as an antidote to arsenic; the *juice* which is strongly acid is to be used "ad purificatinem Corporis"—(Dymock).

489. Ipomoea Sinnata is a native of tropical America introduced in the U. P. It is the "Noyean Plant". The *leaves* have an odour of oil of bitter almonds and are used in the preparation of the French Liquer known by that name.

490. IPOMOEA TURPETHUM.

(*N. O.*—CONVOLVULACEAE).

Sans.—Kalaparni; Trivrit; Triputa; Nandi; Kalameshi. *Eng.*—Turpeth root: Indian Jalap. *Fr.*—Turbith Vegetal. *Ger.*—Turpeth-Trichterwinde. *Hind.*—Pithori; Nakpatra; Nishoth. *Ben.*—Teori; Dhud. *Guz.* & *Mah.*—Taed; Turbeda; Nishotar; Phutkari. *Arab.*—Turband. *Tel.*—Tegada. *Mal. Can.* & *Kon.*—Tigade. *Tam.*—Chivadai; Gunakandi.

Habitat.—This perennial plant grows wild nearly all over India. There are two varieties.—*Sveta* (white) and *Krishna* (black). This plant is sacred to Hindus who offer its flowers to Shiva.

Parts Used.—The dried root and stem and the root-bark.

Constituents.—Turpeth resin consisting of 10 p. c, resin known as *Turpethin* which is a glucoside analogous to Jalapine and Convolvulin and insoluble in ether, benzine, carbon sulphide and essential oils; some ether-soluble resin, a volatile oil, a yellow colouring matter, albumin, starch, lignin, salts and ferric oxide. Under the action of alkaline bases Turpethin is transformed into turpethic acid and in the presence of hydrochloric acid becomes converted into glucose and turpetholic acid.

Action.—The root and root-bark of "white turpeth" which are in common use are cathartic and laxative,

The dark variety "black turpeth" is drastic in action like hellebore black and therefore it is not in use. It is supposed to be the root of Lettsomia Atrepurpurea, a native of Nepal and Sikkim.

Uses—The dried and *powdered root-bark* of the white variety is useful for the removal of dropsical effusions; it is best administered in doses of ½ to 1½ drachms in combination with chebulic myrobalans or with ginger and cream of tartar each 10 to 15 grains; or about two scruples of the root are rubbed into pulp with water and taken with the addition of 10 grains each of rock-salt and ginger or sugar and 5 grains of black-pepper. It is preferable to both jalap and rhubarb. It is particularly beneficial in rheumatic and paralytic affections. The *bark of the fresh root* is rubbed up with milk and administered as purgative. Combined with the three myrobalans, long pepper, ginger, hyoscyamus niger, and *Danti* (Beliospermum montanum) it forms an ideal laxative, useful in melancholia, gout, dropsy, leprosy etc. In constipation with hard faeces a compound powder called *Naracha churna* is recommended in doses of 20 grains—(Bhavaprakash). It consists of the Turpeth root 8 tolas, long pepper 2 tolas and sugar 8 tolas. Another compound powder known as *Tumburadya Churna* consisting of *tumburu* (Zanthoxylon Alatum), rock, *vit* and *Sanchal* salts, *Ajowan*, *pachak* root, *Yavakshara*, chebulic myrobalan, asafoetida and *baberang* seeds, one part each and turpeth root 3 parts, is recommended for painful dyspepsia with costiveness and flatulence—(Sharangdarh). The dose is about a drachm with warm water. In anasarca supposed to be caused by "*pitta*" a decoction of the

turpeth root, with *gulancha* and the three myrobalans is recommended—(Chakradatta). Milk diet is to be prescribed along with this medicine. In paralytic diseases with constipation the following powder is recommended.—Take of Ipomoea turpethum 2, Dodder (Cuscuta Sp.) Aloes ½. Meadow saffron 1 and Terminalia chebula 4, Viola odorata 4, dry Ginger 3, and Scammonium 1 part. Mix and make a powder. Dose.—10 to 15 grains. The following confection is given in colic, chronic gout, rheumatism, lumbago and sluggish liver and intestines.—Take of Ipomoea turpethum 4, scammonium 5, Cardamoms 5, Cinnamomum bark 5, Dry ginger 5, Common Indian parslane (*kulpha*) 5, Cloves 5, Black pepper 5, and Honey 150 parts. Prepare a confection. Dose is 1 to 3 drachms. Another confection called *Trivrit Leyham* is in common use as purgative. It is prepared thus:—Take of 2½ *visses* of the Turpeth roots, cut into small pieces, bruise and boil in 24½ measures of water till it is reduced to its ⅛ quantity, strain and add to the filtrate about 3½ *visses* of sugar-candy. After it has melted in the filtered decoction, reducing the latter to the consistency of treacle, add a fine powder of Cardamoms, Cinnamon leaves and Cinnamon bark 1 *palam* each, and of 1 *viss* of turpeth root, and turn the whole into a confection. Dose.—2 drachms in the morning. A pill called *Chandraprabha gutika* is said to be a successful remedy for gonorrhoea, albuminuria and phosphaturia. It consists of, besides the turpeth root, Croton tiglium, Cinnamon bark, Cardamoms, *Loha bhasma* (Iron bhasmum), Sugar, Bamboo manna, *Yavakshara*, *Swarjika* (Carbonate of soda) and *Makshika Bhasma* (Calcined iron pyrites). Dose.—1 to 4 pills of

6 grains each three times a day with milk or water. It acts as tonic, diaphoretic and diuretic—(Indigenous Drugs Report, Madras). In the same Report the composition of a compound powder "*Trivrit Churnam*" is given. It is as follows.—42 *palams* of turpeth root and 1 *palam* each of chebulic, beleric and emblic myrobalans, Embelia ribes, dry rose buds, cardamoms, cinnamon bark, cinnamon leaves, tubers of Cyperus rotundas, dry ginger, pepper, long pepper, senna leaves and *Katurohini* (Picrorrhiza Kurroa) each 1 *palam*. Dose is $\frac{1}{2}$ to $1\frac{1}{2}$ drs. with sugar in the morning—as purgative.

491. **Iris Florentina**; I. Germanica; & I. Pallida, belonging to Iridaceae (*Sans*—Pushkaramula; Padma Pushkara. *Arab.*—Sosan. Kusht-el-bati. *Bom.*—Balva-ekhanda. *Eng.*—Orris root. *Hind.*—Irsa; Keorakamul. *Pers.*—Beg-i-banfsa (violet root) are plants cultivated in Cashmere, Persia and Kabul. Orris root is to be found in the bazaars of Calcutta and Bombay. The *root* is found to be cathartic, diuretic, stimulant and alterative. The *dry root* contains a volatile oil, starch, resin and tannin. The *essential oil*, otto of orris is highly valued in perfumery. *Tincture* of orris root is sold as essence of Violets. The *root* is chewed to sweeten offensive breath. The *powdered root* enters largely as a fragrant ingredient into the composition of hair and tooth powders. Medicinally the root is used in bronchitis, dropsy and liver complaints. The *roasted seeds* have been said to approach very nearly coffee in quality. Externally the root in *powder* or *poultice* is used as an application to sores and pimples.

492 **Iris Nepalensis** (*Eng.*—Blue Lotus. *Punj. & U. P.*—Sosan; Shoti; Chiluchi) is found on the Wes-

tern and Eastern Himalayas. The *root* is said to be similar in action to Costus. From the large number of diseases in which the drug is recommended it would appear to be regarded as a panacea.

493 Iris Pseudocorus is known as *Pakhanabheda lakri* in Guzrati to distinguish it from the mineral *pakhanabheda*. It is used in the form of decoction or powder in hepatic disorders. It acts as diuretic and also as an aromatic and stimulant. The drug is seldom used alone.

Isora Corylifolia—See Helicteris Isora.

494. IXORA COCCINEA; I. Grandiflora; I. Bandhuca.

(*N.O.*—Rubiaceae)

Sans.—Raktata; Pathalee; Bindhuka. *Tam.*—Cheddi; Vitchie. *Eng.*—Jungle Geranium. *Port.*—Ixora. *Ben. & Hind.*—Rangan; Rajana. *Can.*—Kepala; Kissargida. *Mal.*—Thechhi. *Mah.*—Pentgul. *Kon.*—Patkali. *Burm.*—Pansayeik. The word Ixora is derived from "Isvara" signifying God Siva, as the plant is sacred to Siva.)

Habitat—This small shrub is found growing almost everywhere in India.

Parts Used.—The root and flowers.

Constituents.—The root is found to contain an aromatic acrid oil, tannin, fatty acids, and a white crystalline substance. The flowers contain a colouring and astringent principle of the nature of an organic acid, a wax, a yellow colouring matter related to quercitrin and ash 6.4 per cent.

Action.—A sedative stomachic tonic, intestinal antiseptic and cholagogue, "a true intestinal alterative". Externally astringent and antiseptic.

Uses.—The *root* is useful as a sedative in hiccup, nausea, loss of appetite etc. The root about 30 to 40 grains, ground into *pulp* with a little water and long-pepper, or in the form of *tincture* (1 in 5) is said to be a valuable remedy in diarrhoea and dysentery; better than ipecac since it does not induce nausea; also useful in fever and gonorrhoea. Dose of the tincture is 1 to $1\frac{1}{2}$ drachms. Two tolas of the *flowers* fried in ghee are rubbed down with four *gunjas* (7 grains) each of cummin and *nagakesar* (cinnamon buds) and made into a *bolus* with butter and sugarcandy and administered twice a day in cases of dysentery; they are usefully employed also in leucorrhoea and gonorrhoea. They are administered with whey or buttermilk or goat's milk. Externally to sores and chronic ulcers, the *powdered root* moistened with a little water is applied on a piece of lint. With or without cocoanut milk it is applied to boils and in headaches. In sorethroat the root is used in the form of *tincture well diluted*, as a gargle.

495. **Ixora Parviflora** or I. Alba (*Sans.*—Iswara. *Hind.*—Kotagandhal. *Eng.*—Torch tree. *Mah.*—Kurat; Raikura; Lokandi; Guavi-lakri. *Can.*—Gorivi; Korgi. *Tam.*—Shulundu kora. *Tel.*—Karivi-pola. *Kon.*—Kurati) are found chiefly in Western, Central and Southern India. The *bark* is found to contain fatty matter, tannin, red coloring matter and ash containing a trace of ferric oxide. *Decoction of the bark* (1 in 20) is given in doses of $\frac{1}{2}$ to 1 ounce, as a tonic in anaemia and general debility. The *flowers* pounded in milk are given in whooping cough.

Ixora Pavetta—See Pavetta Indica.

Jambosa Vulgaris.—See Eugenia Jambos.

496. Jasminum Angustifolium belonging to Jasminaceae, (*Sans.*—Priya; Supooja; Malati; Vanamalti. *Hind.* & *Ben.*—Ban-mallica. *Fr.*—Jasmina feuilles etroites. *Guz.* & *Mah.*—Kusara. *Tel.*—Adavi-malle. *Tam.*—Katu-mallige; Shirumalli. *Can.*—Kadu-mallige. *Mal.*—Kattu-malika. *Kon.*—Kusari) is met with generally in the forests in the sea board districts of India. The bitter *powdered root*, mixed with the root of Acorus calamus and lime-juice, is considered a valuable external application in cases of ringworm and herpes.

497. Jasminum Arborescens (*Sans.*—Madhumadavi; Navamallika. *Ben.*—Bārākunda. *Bom.*—Kundi; Kusar rangini. *Tel.*—Adavi malli. *Hind.*—Chameli. *Mah.*—Kusar) is a plant of the N. W. Himalaya, Oudh, Kumaon, Deccan, also of the hot lower hills. The *juice of seven leaves* is ground in cold water with a few grains of pepper and a few ribs of garlic and 4 *mashas* (45 grains) each of Horse-raddish bark (Moringa Pterygosperma) and red *Hasani* and strained is given in ½ tola dose as an emetic in cases of obstruction in the bronchial tubes by viscid phlegm. For young children the juice of half a leaf of J Arborescens and of four leaves of red *Agaste* (Sesbania Grandiflora) may be mixed with two grains each of black pepper and dried borax and given in honey—(Dymock). The leaves are slightly bitter and astringent and might be used as a tonic and stomachic—(S. A jun.)

498. Jasminum Auriculatum (*Sans:*—Yuthika. *Ben:*—Jui) is a small fragrant flowered species much cultivated and esteemed in Ajmir and Bengal.

499. Jasminum Grandiflorum (*Sans. & Hind*.—Jati. *Eng*.—The Spanish Jasmine. *U. P*:—Jahi. *Ben. Guz. & Mah*:—Chameli. *Bom*.—Chambeli.. *Tel. Tam. & Can*.—Jaji-malle. *Mal*:—Pichhakam; Malati. *Kon*.—Jayiche-mogre; Sanjui) a plant with fragrant flowers, is generally met with all over India, especially in the temperate regions, and on the temperate Himalaya. The leaves and flowers have long been known in Hindu medicine. The leaves contain a resin, salicylic acid, an alkaloid named *jasminine* and an astringent principle. The *leaves* are astringent in action. The *whole plant* is considered to be anthelmintic, deobstruent, diuretic and emmenagogue. From the *flowers* a perumed oil or otto is prepared, which is greatly esteemed as cooling and used by the rich for anointing their bodies before bathing, also used as a perfume. It is cooling when applied externally, in skin diseases, headache and weak eyes. According to Bhavaprakash the *leaves* are chewed in aphthae and ulcers in the mouth and the leaf-juice or the *oil* obtained from it is dropped into the ear, according to Chakradatta, in cases of otorrhoea etc, and the *fresh juice* of the leaves is a valuable application for soft corns between the toes. In ulcerations in the mouth, throat and gums, the *leaves fried* in ghee are recommended to be applied. Mahomedan writers mention the use of *flowers* applied as a *plaster* to the loins, genitals and pubes as an aphrodisiac. A *poultice of the leaves* is also used similarly.

500. Jasminum Humile or J. Chrysanthinum *Sans*.—Svarnayuthica; Hemapushpika. *Punj*.—Chamaba; Janari. *Kumaon*.—Sonajahi. *Bom. & Kon*.—Svarnajui.

Hind—Peetmalati. *Tel.*—Pachche adavimalla) is found on the hills of India and Ceylon. The *root* is useful in ring-worm. The *milky juice* which exudes on an incision in the bark of this plant is alleged to have the power of destroying the unhealthy lining walls of chronic sinuses and fistulas—(Major B. Gupta—Watt), "It is bitterish sweet, astringent, cooling, light, antibilious, phlegmatic and beneficial in burning, thirst, skin-diseases, vitiated blood, boil, diseases of teeth, head-diseases and poison." (Kaviraj N. N. Sen Gupta.)

501. Jasminum Officinale (*Sans. & Ben.*—Mallika. *Hind.*—Motiya. *Guz.*—Dojar. *Mah.*—Ran mogri. *Fr.*—Jasmin blanc. *Ger.*—Gebranchlicher jasmin) is a white-flowered plant. Its *flowers* were formerly used as an emollient remedy. The fragrant *oil* which it yields is mixed with the sesame oil and rubbed on the head as a nerve-sedative. Its fruits are narcotic.

502. Jasminum Pubescens (*Sans.*—Kunda. *Hind. & Ben.*—Kundphul. *Guz & Mah.*—Mogra. *Tel.*—Kundamu; Gujari. *Mal.*—Kundam; Kurukutti-mulla. *Can.*—Kasturi mallige. *Kon*—Kasturi-mogre) is common in most parts of India, especially in Bengal and on the East and West Coasts. The *flowers* are lactifuge. The *dried leaves* soaked in water and made into a *poultice* are applied to indolent ulcers to generate a healthy action. The *root* of the wild variety (*Kadu mallige*) is used as an emmenagogue; also used in snake bite and weakness of sight.

503. Jasminum Revolution is a species indigenus to Nepal, distinguished by yellow-petalled flowers.

which yield a delightful essential oil, used in perfumery and the *root* is employed in ringworm.

504. **Jasminum Sambac** (*Sans.*—Vaarshiki. *Eng.*—Arabian Jasmine. *Fr.*—Jasmine d'arabic. *Ger.*—Arabischer jasmin. *Hind. & Ben.*—Balphul; Mogra. *Guz. & Mah.*—Batmogri. *Pers*—Zambak. *Tel.*—Malle. *Tam.*—Malligai. *Can.*—Mallige. *Mal.*—Cherupichhakam; Nallamulli. *Kon.*—Vismogri; Batmogri. *Arab.*—Sumana. Yesmana; Varda abyaza. *Pers.*—Gule supada) is another of the jasmine species cultivated in India, Burma and Ceylon. A variety of this plant is a double flowered mogra known as *Bata-mogra.*—The *flowers* yield a fragrant essential oil similar to that of J. Grandiflorum. It is used as a deodorant in foul-smelling ear and nose diseases. The *root, leaves* and *flowers* are valuable as a lactifuge; a *poultice* of the bruised root or leaves or flowers unmoistened applied to the breasts to arrest the secretion of milk in the puerperal state in cases of threatened abscess. In China the flowers are used for scenting tea. The leaves, if boiled in oil, exude a *balsam* which is used for anointing the head in eye-complaints. It is said to strengthen the vision. It is also used as a remedy in cases of insanity. The *dried leaves* soaked in water and made into a *poultice* are applied to indolent ulcers.

505. **Jasminum Undulatum** (*Fr.*—Jasmin Ondule) is a bitter-leaved species found in Malabar and regarded by some as a variety of J. Sambac, and its flowers are esteemed for their elegance and their fragrance.

506. JATROPHA CURCAS.
(*N. O.*—EUPHORBIACEAE.)

Sans.—Kanana-erańda. *Eng.*—Angular-leaved physic nut. *Fr.*—Medicinier. *Hind*—Jangli-erandi. *Ben.*—Ban-bheranda Gab-bheranda. *Guz.*—Jepal. *Mah.*—Moghli-erendi; Ran-erandi. *Pers.*—Dandi-nahri. *Tel.*—Pepalam: Adavi-amudamu. *Tam.*—Kattamanakku. *Can.*—Kâdaharalu; Bettadaharalu. *Mal.*—Katamanak. *Kon.*—Kad-eradi. *Cing.*—Val-erandu. *Burm.*—Kesugi; Simbo-kesu. *Goa.*—Gala mark.

Habitat.—This evergreen plant is common in waste places throughout India; in the southern parts it is cultivated chiefly for hedges.

Parts Used.—Seeds, juice, leaves and oil.

Constituents--The seeds contain a fixed oil 30 p. c., sugar, starch, albumin (tox-albumin analogous to *ricin* and named *curcin*), caseine and inorganic matters. The oil contains jatrophic acid (the active principle of the oil The kernels and husks yield ash 6 p. c. and nitrogen 3 p. c.

Action.--The seeds are acro-narcotic. The oil from the seeds is purgative internally, and externally it is depurative and antiseptic. The leaves are lactagogue locally; the stem-juice is haemostatic and styptic. The root-bark is stomachic astringent.

Uses.--The seeds yield a pale yellow *oil* which in doses of 10 to 20 drops as purgative is equal in action to one ounce of castor oil; but it is far less certain in its operation and causes more griping than castor oil. Its ill-effects, griping etc., are corrected by lime-juice as in the case of croton seeds. *Externally* it is an esteemed remedy for itch, herpes and eczema, and it is said to be a cleansing appli-

cation for wounds and ulcers. Diluted with a bland oil (1 part to 2 or 3) it forms a useful embrocation in chronic rheumatism. It is generally used for burning and adulterating olive oil. The *leaves* locally applied to the breasts are said to increase the secretion of milk. For this purpose *fresh leaves* are warmed before a fire and layers of them are applied over the breasts; or the breasts are bathed for a quarter of an hour with a *decoction* made of a handful of the plant in six or eight pints of water and then the boiled leaves are spread over them in the form of a *poultice*. In a few hours the effects of the application will be manifest. The leaves warmed and rubbed with castor oil and applied to boils and abscesses have the suppurative effect. The fresh viscid *juice flowing from the stem* is employed to arrest bleeding or haemorrhage from wounds, ulcers, cuts and abrasions; it is said to promote healing by coagulating the blood and forming an air-tight film when dry like that produced by collodion. It is a successful local remedy for scabies, eczema and ringworm. Wonderfully good results are said to have been obtained by injecting a drachm of the juice into a varicose aneurism, the pulsation having ceased within a few hours and a good firm clot produced. "No ill effects resulted from the injection"—(Dr. Evers). The juice when dried in the sun forms a brownish brittle substance like shellac. The *root-bark* is applied externally in rheumatism. Rubbed with a little asafcetida it is given with butter milk in dyspepsia and diarrhoea. The fresh stems are used as tooth-brushes, to strengthen the gums and to cure bleeding, spongy-gums or gum-boils.

507. Jatropha Glandalufera & J. Gossibifolia (*Sans.*—Nikumba. *Bom.*—Velaty erandi. *Hind. & Ben.*—Lal-bheranda. *Mah.*—Underbibi; Ran-erandi. *Tam.*—Udalai. *Tel.*—Dundigapu; Nela-amudumu) are found in Northern Circars, Deccan, Bengal, especially on the bunds of tanks. The constituents found in the plant are similar to those of J. Curcas, and also in action it is purgative, counter-irritant and stimulant. The *root* brayed with water is given to children suffering from enlargement of spleen or liver. It purges and reduces glandular swellings. The *juice* is escharotic, acrid, counter-irritant and is used to remove opacity of the cornea or thickening of the conjunctiva. The *oil* obtained from the seeds by roasting them is applied to joints in chronic rheumatism, chronic ulcerations, sinuses, ringworm and paralysis.

508. Jatropha Manihot (*Eng.*—Cassava or Manioc plant) is the plant from the root of which the starch *Tapioca* is obtained. It is an excellent food for invalids but not so easily digestible as sago

509. Jatropha Montana or Baliospermom Montanum or B. Axillare (*Sans.*—Danti-nana; Makulaka. *Hind.*—Hakni. *Guz.*—Danti-mul. *Bom. Mah. & Kon.*—Jamalgot. *U. P.*—Jangli-Jamalgot. *Tam.*—Nagdanti. *Burm.*—Tha-du-wa) is found in tropical Himalaya, Deccan, Bengal and N. Circars. The root contains resin and starch. The *root* is purgative, often used in combination with aromatics, in constipation with flatulence and in anasarca and jaundice. The *seeds* are drastic, purgative, and given with *trikatu* and *kankankhara*. Dose is one seed of 1 to 3 grains. The follow-

ing are two useful home-remedies:—(1) *Naracha rasa* :— Take of the seeds of Baliospermum montanum 9 parts, mercury, borax and black pepper, one part each, sulphur, ginger and long pepper two parts each; powder the ingredients and make into two-grain pills with water. These are given in constipation and tympanites(2) *Gudashtaka*:— Take of *Danti*, *trivrit* and plumbago roots, black pepper, long pepper, ginger and long pepper root, equal parts in fine powder; treacle, equal in weight to all the other ingredients and mix. Dose is about a tola every morning in flatulence and retained secretions, anasarca, jaundice, etc,—(Bhavaprakash). The expressed *juice* of the young leaves applied to a bleeding cut or bruise, and the leaves applied as bandage, stops the hæmorrhage, prevents suppuration and heals the wound.

510. **Jatropha Multifida** (*Eng.*—Coral tree. *Fr.*—Mediciner d'Espagne) is a common ornamental shrub in Indian gardens. It is not used medicinally since its seeds are too powerful purgative and emetic. One seed acts as emeto-cathartic. Lime juice and stimulants are the best antidotes in cases of poisoning by the seeds.

511. **Jatropha Nana** (*Mah.*—Kirkundi) is a rare plant found in waste stony places near Poona. The juice is used as a counter-irritant like that of J. Glandulifera.

Jonesia Asoka & J. Pinnata.—See Sarsa Indica.

512. **Juglans Regia** is a tree of genus Juglandeae (*Sans.*—Akshota. *Eng.*—Walnut. *Hind. & Ben.*—Akhrot. *Arab.*—Jouz. *Pers.*—Charmaghz. *Fr.*—Noyer cultive; gognier. *Ger.*—Wallnussbaum) found wild in the Hima-

layas and largely cultivated in Afghanistan, Kashmir and Tibet. The *leaves* are alterative and astringent and given in the form of *docoction* (1 in 12) in scrofula, rickets and leucorrhoea, and used as a wash for malignant sores and pustules. The seeds yield a fixed oil, nucin or juglandic acid and a resin. The *oil* is used internally as a taenicide especially for tapeworm, a mild laxative and cholagogue and externally in caligo (dimness of vision). The *unripe fruit* also is a vermifuge, and is given to children. The *ripe fruit* or *kernel* of the seed is palatable and edible and possesses aphrodisiac properties. The husks of fruit or *pericarp* possess vermifuge and antisyphilitic properties. A *spirit* distilled from the leaves or fruits is reputed to be antispasmodic and useful in checking the sickness of pregnancy; dose is 1 to 2 drachms. The *bark* of the tree is said to be used as an astringent anthelmintic and lactifuge. A *decoction* of the bark is used to stop mammary secretions, and as a gargle in sorethroat.

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513. JUNIPERUS COMMUNIS.

(*N.O.*—CONIFERAE.)

Sans.—Hapusha. *Eng.*—Juniper. *Hind.*—Aarar. *Pers.*—Hab-ula-ushara, *Bom.* & *Arab.*—Abhhal-arar. *Fr.*—Geneverier. *Punj.*—Abhul Haubera. *Duk.*—Abbal. *Indian Bazaar.*—Padma.

Habitat.—The Juniper tree is common on the North-west of the Himalayas and Persia.

Parts Used.—The berries and the volatile oil (Ol. Juniper B. P.)

Constituents.—A volatile oil 1.2 p. c., grape sugar 30 p. c., resin 10 p. c., a noncrystallizable principle (*Juniperin*), fat, wax, proteids 4 p. c., malates, formic and acetic acids. An oil is distilled from the leaves and young twigs.

Action.—Fruit is aromatic, carminative, stimulant, emmenagogue and diuretic. The wood is sudorific. The oil is stomachic and carminative in small doses; powerful renal stimulant and diuretic in ordinary doses.

Preparations.—Powder of the berries, dose.—1 to 3 drachms; Oil as stomachic and carminative, dose—½ to 2 minims; as diuretic from 4 to 6 minims. Spirit (1 in 20), the dose is from 20 to 60 minims. Compound Spirit containing the oils of juniper, caraway and fennel dissolved in alcohol, dose is from 1 to 4 drachms. Infusion of Juniper tops (1 in 20) the dose is from 2 to 3 ounces. The infusion is best used as a vehicle for other diuretics.

Uses.—The wood is resinous and is used as an incense. The fruit, "juniper berry" is aromatic and terebinthinate and a volatile oil distilled from it "Juniper berry oil," is used in Europe principally to flavour a spirit called Geneva. The *fruit* and *oil* are useful in scanty urine, chronic Bright's disease, hepatic dropsy, coughs and pectoral affections, in chronic gonorrhoea and leucorrhoea. The oil should not be given in acute nephritis. Locally the *powder of berries* is rubbed on rheumatic and painful swellings. In some parts of Europe, juniper berries are roasted, ground and used as a substitute for coffee; they are employed in Sweden and Germany as a conserve and

as a culinary spice. The *ashes of the bark* are applied in certain skin affections.

514. **Jurinea Macrocephala** is of the Compositae family (*Punj.*—Dhup ; Dhup gugal) found on the Western Himalaya from Cashmere to Kumaon. The bruised root is applied to eruptions and a decoction is given in colic. It is considered cordial and given in puerperal fever.—(Dr. Stewart.)

515. **Jussiaea Suffruticosa** ; J. Villosa, are of the genus Onagraceae (*Sans.*—Bhallavianga. *Ben.*—Lalbunlanga. *Hind.*—Ban-launga. *Tel.*—Neerbatsala. *Mal.*—Karambu. *Can.*—Ravacula. *Bom.* & *Kon.*—Panlavanga. *Cing.*—Haemarago) are found throughout the greater part of India. The plant reduced to a pulp and steeped in butter milk is considered useful in diarrhoea and dysentery. A decoction (1 in 20) is astringent, carminative, diuretic and vermifuge. It is given in flatulence in doses of ½ to 1 ounce. As astringent it is given in haemoptysis and leucorrhoea.

Justicia Bivalvis & J. Adhatoda.—See Adhatoda Vasaka.

516. **Justicea Ecbolium** is a small shrub, the roots of which are useful in jaundice and menorrhagia the whole plant is used in gouty affections and dysuria.

Justicia Gendarussa.—See Gendarussa Vulgaris.

Justicia Nasulla.—See Rhinacanthus Communis.

Justicia Paniculata—See Andrographis Paniculata.

517. **Justicia Picta** is a garden shrub used like Adhatoda Vasaka. The veriegated variety is called "white Adulsa", and the dark leaved kind "black Adulsa," The

first is used pounded with cocoanut milk to reduce swellings. The leaves are emollient and resolvent, and used as a cataplasm to inflamed breasts due to obstruction to the flow of milk.

518. **Justicia Procumbens** (*Fr.*—Carmeutine Couchee. *Mah.* & *Kon.*—Ghatipithpapra. *Tam.*—Nerei-poottie) is a species found on the pasture grounds (abundant in the rainy season) in South India, Deccan and Ceylon. The herb contains a bitter alkaloid; it is used as a substitute for Fumaria (the true *pithpapra*). It is alterative and expectorant and given in the form of *infusion* (1 in 20 in asthma, cough, rheumatism etc; dose is from 4 to 6 drachms. The juice of the leaves is squeezed into the eye in cases of ophthalmia.

Justicia Repens.—See Rungia Repens.

519. **Justicia Tranquebariensis** is a species found in India, the juice of whose leaves is cooling and aperient and is given to children in small pox. The bruised leaves are applied to contusions.

520. **Justicia Zeylonensium** (*Eng.*—Common Malabar nut) is a species found in Ceylon related to J. Adhatoda.

521. **Kaempferia Galanga** is a species of genus Zingiberaceae, (*Sans.*—Sugandhavacha; Chandramalika. *Tel.*—Chandramoola; Sime-kich.chilik. *Hind.*—Sidhoul. *Duk.*—Vilati Kachu. *Tam.*--Kachholakilangu. *Can.* & *Kon.*--Kachhur. *Mal.*—Kachhuram. *Ben.*—Chandumula; Humula. *Guz.* & *Mah.*--Kapurkachri) growing abundantly in gardens in the southern parts of India. The *tubers* are stimulant and expectorant; they are used as a masticatory

with betel leaves and arecanut. The tubers are used generally in perfumery. They are attached to the necklaces for their perfume and also placed in the clothes. *Leaves* are also used as a perfume in washing the hairs. Medicinally the *tubers* reduced to *powder* and mixed with honey are given with much benefit in coughs and pectoral affections. The *oil* in which they are boiled, or the tubers boiled in oil are used in applying to remove obstructions in the nasal organs. The tubers contain an alkaloid, starch, gum, fatty matter with a fragrant liquid oil and a solid white crystalline substance and mineral matter.

522. **Kaempferia Rotunda** and K. Longa belonging to Scitamineae (*Sans.*—Bhumichampaka. *Hind.* & *Ben.*—Bhuichampa. *Tel.*—Bhuchampakamu. *Mah.*—Bhuichapa. *Guz.*--Bhuichampo. *Tam.*--Nerpichan. *Can.*-Nelasampige. *Mal.*--Chenchineerkilang). are found cultivated in gardens in India and Burma. The *roots* have a hot gingerlike taste. The fresh bruised *tubers*, even the *whole plant* are in popular use in many parts of India in the form of *powder* or *ointment* as an application to wounds and bruises to reduce swellings; used in mumps and cancerous swellings also. The *decoction* is applied with much benefit to wounds with coagulated blood and with any purulent matter, and also taken internally with the object of purifying blood and removing pus from the body.

523. **Kalanchoe Laciniata**; K. Pinnata and Bryophyllum Calycinum, are the species of the genus Crassulaceae (*Sans.*--Hemasagara; Astibhaksha. *Hind*, & *Ben*.--Hemsagar. *Bom.*—Parnabij. *Mah.*—Ghaipat; Aran-

maran. *Hind.* & *Pers.*—Zakhm hyat. *Duk.*—Ghaemari. *Tam.*—Mala kullie. *Can.*—Kalanaru) cultivated in gardens, and wild on the hills of North-Western India, Deccan and Bengal. The *leaves* contain chlorophyl, fat, a yellow organic acid, cream of tartar, sulphate of calcium and free tartaric acid and calcium oxalate. The *leaves* are styptic, astringent and antiseptic. The *leaves* roasted over a fire or fresh *bruised leaves* and *juice* are applied as *poultice* to bruises and contusions to allay inflammation and prevent discolouration and as a styptic on fresh cuts, abrasions, wounds etc., and over bites of venomous insects, gnats, house leek etc. Internally the *juice* is given in ½ to 1 tola doses with double the quantity of butter in diarrhoea, dysentery, lithiasis, cholera and phthisis.

524. Kariyat (*Sans.*—Mahateeta. *Hind.*—Kiryat. *Ben.*—Cherorta. *Guz.*—Kiryata. *Mah.*—Chirayita. *Cing.*—Binko hamba. *Malay.*—Charita) is the dried stalk and root of Andrographis paniculata which is common throughout the plains of India and cultivated in gardens in some parts. *Kariyat* is a valuable bitter tonic useful in general debility, in convalescence after fevers and in the advanced stages of dysentery. It is best given as follows:—Take of kariyat bruised ½ ounce; acorus or sweet flag root and dill seeds bruised, of each 60 grains; boiling water, ½ pint; infuse in a covered vessel for an hour and strain. Dose—from 1½ to 2 ounces twice or thrice daily. The following preparation has been highly spoken of.—Take of kariyat cut small, 6 ounces; myrrh and aloes in coarse powder, of each 1 oz; brandy two pints; macerate for 7 days in a closed vessel, occasionally

shaking it, strain, filter and add sufficient brandy to make two pints. Of this the dose is from 1 to 4 teaspoonfuls in a little water taken on an empty stomach. It acts as a gentle aperient and is said to prove very useful in many forms of dyspepsia attended with torpidity of the bowels. In the bowel complaints of children, a *decoction of the fresh leaves* of the Kariyat plant has been well spoken of It is prepared by boiling 2½ ounces of the fresh leaves in 1½ pint of water down to 6 ounces; of this the dose is one ounce every two or three hours. It may be used in conjunction with other remedies required.

Kydia Calycina.—See Hibiscus Tiliaceus.

525. Kyllingia Triceps and K. Monocephala.—(*Sans.*—Nirvisha, *Hind.*—Nirbishi. *Ben*—Nirbishaghas; Sveta-gotubhi. *Mah*—Musta. *Mal.*—Mothenga; Peemottenga. *Port.*—Coquinha) are found throughout India. The root in decoction (1 in 10) is refrigerant, demulcent and tonic; it is given to relieve thirst in fevers and in diabetes; dose is from 1 to 2 ounces. The *oil* distilled from the root is used to relieve pruritus of the skin. Internally the oil is given in torpor of the liver. Other properties are similar to those of Cyperus Rotundas. It is said to be "alleviative of wind and phlegm" (*vata* & *kuffa.*)

526. LACTUCA SCARIOLA; L Sativa; L. Capitata; L Virosa.

(*N. O.*—Compositae).

Eng.—The Lettuce. *Fr.*—Laitue Cultivec. *Hind. Duk.* & *Ben.*—Kahu; Salad. *Bom. Pers. Guz.* & *Mah.*—Kahu. *Arab.*—Bazr-ul-khas. *Pers.*—Tukm-i-kahu. *Tam.*—Shatlatu-virai.

Habitat.—L. Scariola is found wild on the Western Himalaya. L. Virosa is a variety closely allied to L. Scariola. Lactuca sativa, the common or garden variety, is cultivated in many parts of India as a culinary vegetable.

Parts Used.—The seeds and concrete milky juice (Lactucarium).

Constituents.—L. Scariola contains Lactucarium which is a mixture of lactocin and three bitter principles.—Lectucin (the chief active principle), lectopicrin and lectucic acid; it also contains lactucerin—an inert waxy substance about 50 p. c., and a trace of hyoscyamine; also a non-volatile acid and a volatile acid smelling like valerianic acid, albumen 7 p. c. mannite 2 p. c. and ash 3 to 6 p. c., which contains potash, soda, manganic oxide, ferric oxide and lime. Lectucin occurs in white crystals or scales. The leaves of L. Scariola contain albuminous matter, starch, sugar, gum, cellulose, lignose, chlorophyll, fat and ash rich in nitrates. Lettuce is exceptionally rich in iron; but in the cell-sap only a very slight portion of iron exists, and this is almost entirely precipitated by boiling.

Action.—Anodyne, sedative, hypnotic, diuretic and expectorant; in action similar to opium, but it leaves no bad after-effects. The wild variety is believed to possess the sedative property in greater degree than the cultivated. The seeds are cooling, demulcent and refrigerant. The leaves are slightly hypnotic and sedative.

Preparations—Decoction and infusion, dose is 1 to $1\frac{1}{2}$ ounces; the inspissated juice *Lactucarium*, dose is 3 to 8 grains; Powder of the seeds, dose is 10 to 20 grains;

Tincture, dose is 10 to 30 minims; Syrup, containing 10 p. c. of the tincture, dose is 1 to 4 drachms; Extract, dose is 5 to 15 grains; Oil and Confection. Lectucarium is a brownish viscid substance obtained by evaporating the juice exuding from the stem of the wounded wild lettuce. It has a peculiar opium odour and acts as a narcotic.

Uses.--The *extract* or the *juice* is given in nervousness and palpitation of the heart. The *seeds in powder* are used in fevers, active inflammations, in coughs, bronchitis, asthma and pertussis. The seeds in *decoction* or *tincture* are useful in insomnia and wakefulness due to mental overwork, in rheumatism, insanity, spermatorrhoea etc. The *dry juice* also is useful in these complaints. The *seeds* are given *boiled* or in *confection* in chronic bronchitis, in doses of 2 to 4 drachms. Lettuce *poultice* is a soothing application to painful ulcers. For delirium the following *inhalation* has been recommended in ILAJ-UL-GURBA.--Take of *Ab-kahu* (Extract of Lettuce), *Ab-kashniz* (Coriander) and *Ab-khiar* (Catechu). Mix these with vinegar and use for inhalation. In the same is recommended for insomnia a *confection* made of the mucilage extracted by soaking in water two parts of poppy seeds to every one part of Lettuce seeds sweetened with sufficient quantity of sugar. Combined with hot water lettuce is given to cure certain forms of dyspepsia and liver complaints.

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527. LAGENARIA VULGARIS.

(*N.O.*—CUCURBITACEAE.)

Sans.—Katu-tumbi; Tikta-tumbi; (sweet) Alabu. *Fr.*—Gourde. *Ger.*—Flaschenkurbis. *Eng.*—The bitter bottle-

gourd; (sweet) white pumpkin. *Hind.*—Lauki; Jangli-khaddu; (sweet) Khaddu. *Ben.*—Tikta lana; Lau; Kodu. *Guz.*—Kadwitumbade or bopla. *Mah.*—Ran-bhop la; (sweet) Dudhya-bhopla. *Per.*—Kaddu. *Tel.*—Chiti-Anab, Surakaya. *Tam.*—Sorai kay. *Can.*—Kahisore. *Mal.*—Anapa-kai; Katuchuram *Kon.*—Kadu duddi; (sweet) Duddi.

Habitat.—This climbing plant is found wild and cultivated nearly all over India.

Parts Used.—The seeds, seed-oil and pulp of the fruit.

Action.—The *fruits* and *leaves* are edible; the *leaves* are purgative. The white pulp of the fruit of the cultivated variety is sweet and edible and cooling, diuretic and antibilious; while that of the smaller wild variety is bitter, emetic and drastic purgative like colocynth. The oil from the seeds is cooling. The seeds are nutritive and diuretic.

Uses.—The *seeds* yield a clear limpid *oil* which forms an emollient application for the head and to relieve headache. It is also administered internally. The *pulp* of the cultivated forms is occasionally employed as an adjunct to purgatives, and also as ingredient in various confections; it is useful in coughs, and as an antidote to certain poisons. *Externally the pulp* is applied as a *poultice* and a cooling application to the shaved head in delirium and to the soles in "burning of the feet". The *bitter fruit* burnt into *ashes* and mixed with honey forms a nice application to eyes for night blindness. The *juice* of the fruit boiled with *Sirsael* (sweet oil) in equal parts till the juice is all absorbed in the oil, forms an appli-

cation to scrofulous glands. This is recommended in ILAJ-UL-GURBA for application to the head in cases of delirium. For insomnia it recommends an oil extracted from the seeds of Lettuce, Pumpkin, Watermelon and Poppy in equal parts for rubbing on the head. And for atrophic Rhinitis the same recommends the instillation of a few drops of the juice of the bitter pumpkin. For vaginal contraction the *seeds* of pumpkin and *lodhra* both ground down with water form a useful local application. The *leaves* of pumpkin are recommended to be taken in the form of *decoction* with sugar for jaundice.

528. **Lagerstraemia Flos-reginae** of the genus Lythraceae (*Hind.*—Arjuna. *Ben.*—Jerul. *Assam.*—Ajhar. *Bom.*—Tamana. *Concan.*—Mota-bandara. *Mah.*—Mota-bon; Dara. *Tam.*—Kadali. *Tel.*—Chen-nangi. *Can.*—Challa; Hole dasal; Maruva. *Cing.*—Murute; Muruta gass) is found in East Bengal, Assam, Burma, and the West coast. The *root* is prescribed as an astringent; the *seeds* are said to be narcotic, the *bark* and *leaves* purgative—(Rev. J Long). Dr. Stewart considers the bark of L. Indica as stimulant and febrifuge.

529. **Laminaria Saccharina; L. Digitata; L. Potatorium** are Algae belonging to the Seaweed Family. (*Hind.*—Galhar-ka-patta. *Eng.*—Sweet Tangle; Sugar sea beet) found throughout India in salt lakes and deep seas. The plant contains 12 p. c. of mannite and iodine. When dried in the sun it exudes a whitish saccharine substance. A *syrup* made of this plant combined with decoction of quince seeds is given for the cure of goitre (Bronchocele); also given in scrofulous and syphilitic affections. A simple *infusion* made by steeping the seaweed in cold water

overnight and taken in the morning on an empty stomach is a remedy for bronchocele.

530. **Lathyrus Sativus** is a Leguminous species (*Sans.*—Triputa. *Eng.*—Chick Vetch. *Fr.*—Masaing. *Hind.*—Khesari. *U. P.*—Latri. *Ben.*—Teora *Assam.*—Kalamaha. *Pers.*—Masang. *Kon.*—Lang. *Guz.*—Mater. *Tel.*—Lamka. *Arab.*—Habul Bakar; Khalagi) largely cultivated as a pulse crop, chiefly on alluvial soils in the North-West and Central Provinces. The *seed* is a nutritious food, but its continued use induces paralysis preceded by rheumatoid pains and termed lathyrismus, in the lower limbs. It is a kind of vegetable food poisoning (sitotoximus). Specially the seeds and bark are said to contain the poison. This toxin has been traced to a volatile alkaloid which is said to be readily dissipated when the pulse is sufficiently heated and properly cooked. But Scientists and research Workers after careful investigations of the chemistry of the seeds and experimentation with them on animals have recently come to the conclusion that the seeds of L. Sativus contain no alkaloids and that the small traces of alkaloids separated by previous workers have owed their origin to *extraneous* seeds and were not derived from the seeds of L. Sativus. Owing to the general observation that ordinary *Khesari* seed was a mixture of the seed of L. Sativus with other weeds chiefly the vetch Vicia Sativa *var.* L. Angustifolia, known as *akta*, the seed was examined more minutely. On extracting the crushed seeds with Prollius fluid evidence of the presence of bases showing alkaloidal properties was obtained. From careful chemical researches and experiments they have come to the following conclusions.—(1)

The seeds of *khesari* (L. Sativus) have been found, on chemical examination, to be free from substances of an alkaloidal nature. Controlled experiments with this seed over long periods with ducks and monkeys have demonstrated that the grains are harmless and provide a nourishing diet for these animals. (2) An examination of the weeds which contaminate *khesari*, has proved that *akta* (Vicia sativa *var* L. angustifolia) contains bases showing alkaloidal properties. Two such bases, vicine and divicine, and a cyanogenetic glucoside vicianin, have been isolated, prepared in the pure state, and used in inoculation experiments on animals. Divicine, which occurs in *akta* in combination with a sugar as the glucoside vicine, produces on inoculation in guinea-pigs a characteristic and fatal disease. *Akta*, when fed to ducks causes death. In monkeys, it produces a very characteristic train of symptoms affecting the nervous and muscular systems. (3) Though certain of the symptoms occuring in monkeys fed on diets containing *akta* have been described in cases of human lathyrism, we are not yet in a position to state, in the absence of pathological proof, that *akta* is the cause of lathyrism in man.—("Studies on Lathyrism" by L. A. P. Anderson, Albert Howard & J. L. Simonsen, Central Research Institute, Kasauli; Institute of Plant Industry, Indore; and Forest Research Institute, Dehra Dun; in April 1925 of the "Indian Journal of Medical Research").

In the Nagpur and Bhandara districts of the C. P. a smaller seeded variety known as *Lakhori* and devoid of the toxic property above referred to is extensively cultivated—(Watt). The Constituents of L. Sativus are.—Water 11.1, Albuminoids 24.4, Starch 55.3, Oil 1.0.

Fibre 5.4. and Ash 2.8. p. c. The oil expressed is a powerful and dangerous cathartic. Lathyrism as described in the Ayurvedic Works.—"The *Triputa* pulse is sweet, bitter and astringent; very dry, destroyer of *Pitta* and *Sleshma*, savoury, constipating and cold. But it causes a man to become lame and cripple; and it irritates the nerves." In the Madan Pal Nighantu or Madanvinode by Raja Madan Pala we find the two varieties of *Khesari* described as the larger and the smaller seed varieties,—*Kalai* is called *Khandika*, *Triputa* is small *khandika*. Kalai corrects *Sleshma* and *Pitta*, is constipating and irritates nerves. The triputa has similar properties. The green leaves also correct *Slesma* and *Pitta*."

531. **Launaea Pinnatifida** is a species of Compositae (*Bom*.—Pathri. *Sind*.—Kheekhowa; Bankahu. *Goa*.—Almirao) met with on the sandy coasts of India from Bengal to Ceylon, Madras to Malabar. It is used at Goa as a substitute for Taraxacum. In Bombay it is given to buffaloes to promote the secretion of milk The *juice* is used as a soporific for children in doses of half a *masha* and is externally applied in rheumatic affections combined with the oil of Pongamia glabra or the juice of the leaves of Vitex Lentoxylon—(Murray.)

Laurus Cassia or L. Cinnamomum.—See Cinnamomum Cassia.

532. **Laurus Nobilis** is a Lauraceous plant. (*Eng*.—Sweet bay laurels; Victor's laurels. *Pers*.—Habula-ghara) the *leaves* and *berries* of which are reputed to be astringent, stomachic, aromatic, stimulant and narcotic. A *decoction of the leaves* is used in leucorrhoea, diseases of the urinary organs and dropsy. It is also a powerful

emmenagogue. The *oil* expressed from the seeds after boiling them in water, is used locally to relieve rheumatic pains.

533. **Lavendula Burmanni** (*Duk.* & *Guz.*—Surpano-Charo; Asmanigalgota; Jangli lavender) a species of Labiatae is common in the West from Concan to Coorg, Deccan and Central India. This plant grows where serpents abound. It is supposed to act as an antidote for poison. The *roots* are rubbed with water and the solution of the paste is applied over the sting of wild animals. The *powdered leaves* are given for inhalation to the person stung by a serpent in order to prevent him from falling into sleep. *Oils* expressed from its flowers and leaves are different from each other physically and chemically.

Lavendula Carnosa.—See Aniscochilus Carnosus.

534. **Lavendula Stoechas** of the genus Labiatae (*Eng*—Arabian or French Lavender, *Fr.*—Stoechas Arabique. *Arab.* & *Bom.*—Usatukhudusa. *Hind.*—Alaphajana Dharu. *Guz.*—Lavendara-na-phula. *Port.*—Alfazema) is a native of Arabia and Mediterranean Coasts to Asia Minor. The drug has an agreeable odour resembling that of lavender. Mahomedan physicians regard it as "cephalic, resolvent, deobstruent and carminative and prescribe it in colic and chest affections"; they also think that it assists in "expelling *pitta* and *kafa*." In MAKHZAN-EL-ADWIYA it is called the broom of the brain, it is said to sweep away all *kafa* impurities, remove obstructions, strengthen brain powers, expel brain crudities and clarify the intellect. It is a good stimulant, aromatic, general carminative, diaphoretic, expectorant, antispasmodic and emmenagogue. An *essential oil* is distilled from the

flowers and is used in colic and chest affections and to relieve biliousness ; locally to relieve nervous headache. Fomentation with the flowers relieves rheumatic and neuralgic pains.

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535. LAWSONIA ALBA ; L. Spinosa ; L. Inermis.

(*N.O.*—LYTHRACEAE).

Sans.—Mendhi ; Raktagarba ; Kuravaka. *Eng.*—Henna ; Samphire. *Fr.*—Henne. *Hind. Guz. Mah. Duk.* & *Punj.*—Mendhi. *Ben.*—Mehedi. *Cash.*—Mohuz. *Pers.*—Hina. *Arab.*—Yoranna. *Cing.*—Meritondi. *Burm.*—Dambin. *Tam.*—Maruthonri ; Aivanam. *Tel.*—Goeranta ; Kuravamu. *Can.*—Madarangi. *Mal.*—Mailanchi. *Kon.*—Methhi ; Padche methi. *Malay.*—Hinie ; Pontaletsche.

Habitat.--Common all over India, cultivated chiefly as a hedge plant.

Parts Used.--Leaves, bark, flowers, and seeds.

Constituents.--The leaves yield a coloring matter 12 to 15 p.c. Hanno-tannic acid, a kind of tannin and an olive green resin soluble in ether and alcohol. The seeds yield an oil. The flowers yield a fragrant otto or oil.

Action.--The bark is alterative, sedative and astringent. The leaves are astringent, and detergent deodorant. The flowers are soporific.

Uses.—The *juice* of the plant with sweet oil is an application to the head in headaches. The fresh leaves beaten into a *paste* with vinegar or lime-juice are applied as a *poultice* to the soles of the feet to cure the troublesome affection "burning of the feet." Another plan is to use strong friction with the bruised leaves over the parts.

Arabic and Persian writers recommend a paste of the leaves with oil and resin added as a valuable application to the head in headaches, and to the soles of the feet in small-pox to prevent the eyes from being affected by the disease. The *leaves* or the herb ground into a *soft paste* with water are also similarly applied with benefit in cases of rheumatism. The leaves yield a dye which is extensively used for staining hands and finger nails; in conjunction with catechu and indigo they are also used as a hair-dye. Applied to the hair they are said to promote healthy growth. An *ointment* prepared from the leaves is used to cure wounds and ulcers. Their *decoction* is useful as an external fomentation in bruises, sprains, inflammations and burns; it is also an astringent gargle in ulcers of the mouth, and is an excellent injection for gonorrhoea. The *leaf juice* mixed with water and sugar or milk is given in spermatorrhoea and in the condition known as hot and cold fits—(Dymock). The *bark in infusion* is given in jaundice and enlargement of the liver and spleen, in calculus affections and as an alterative in leprosy, and obstinate skin diseases. In decoction it is applied to burns, scalds, etc. With honey and tragacanth the *seeds* act as cephalic. The leaves and seeds are useful in menorrhagia, vaginal discharges, and leucorrhoea. In such cases a *powder of the seeds and leaves* is put into a piece of calico or cotton and kept as a *potali* (small bag) into the vagina. The *fragrant water* distilled from the flowers was formerly employed by the Jews in baths and for perfuming the oils and ointments with which they anointed the body, and for embalming. According to Ainslie an *extract* from the flowers, leaves and tender

shoots is a valuable remedy in cases of lepra and other depraved conditions of the body in doses of half a drachm twice a day. The *infusion* of the flowers or of the seeds cures headache and is a good application to bruises. A pillow stuffed with flowers is said to act as soporific.

Ledebouria Hyacinthoides; L. Macula—See Scilla Indica.

536. Leea Arguata or L. Hirta (*Sans. Hind & Ben.*—Kakajangha) found in Sikkim, Himalaya and East Bengal is a species of Ampelidae, the *tubers* and *stems* of which are used medicinally as astringent, bitter acrid, mucilagenous, "stimulant and alleviative of phlegm and bile (*Kapha* and *pitta*) and beneficial in worms, boils, deafness, indigestion and jaundice"—(N. N. Sen Gupta).

537. Leea Crispa (*Ben.*—Ban-chelta. *Malay.*—Nalagu) is found in Sikkim, Terai, Assam, Dacca and Chittagong. The tubers are used as a specific remedy for guineaworm and the *leaves bruised* are applied to wounds.

538. Leea Macrophylla (*Sans.*—Dhola samudrika. *Ben.*—Tulsamudra. *Hind.*—Samoodraka. *Bom. & Mah.*—Dinda. *Santal.*—Hatkan) is a plant of tropical India and the East Indies. The mucilaginous root like that of L. Crispa is employed as a *paste* or *poultice* in the cure of guineaworm, and obstinate ulcers and ringworm. The root is supposed to have anodyne properties and applied externally to allay pain and also to stop the bleeding from wounds—(Mason).

539. Leea Robusta met with in Sikkim and Western Himalaya (*Nepal.*—Gubui. *Goa.*—Gino) is another species of Ampelidae known in medicine for its

soft and fleshy *root* applied externally as an anodyne and also given to cattle for diarrhoea. See also L. Staphylea.

540. Leea Styphylea or L. Sambucina (*Hind.* & *Ben.*--Kakurjiwah. *Mah.*—Karkani. *Gou.*—Dino. *Tel.*—Ankados. *Mal.*—Nalugu. *Cing.*—Burulla-guralla) is met with in the hotter parts of India and Ceylon. The *root* is cooling and its *decoction* relieves thirst. It is given also in colic and other intestinal complaints The *roasted leaves* are applied to the head in vertigo. The *juice* of young leaves is digestive and is much used in diarrhoea and dysentery and *externally* as an application in gout. The root is said to be used as sudorific also.

541. Lens Esculenta is a plant belonging to Leguminoseae (*Sans.*--Masurika. *Eng*—Lentils. *Hind.* & *Mah.*—Masur. *Ben.*---Masuri. *Arab.*--Adasa. *Tel.*--Misur-pappu. *Tam.*--Misur-purpu. *Pers.*—Miraju maka) grown in most parts of India as a food pulse. *Lentils* are used as a strengthening and stimulating article of food. It has the reputation of being useful in constipation which it prevents also. It is one of the pulses which contain uric acid or material which in the body is capable of producing uric acid and which can be got rid of by careful preparation and cooking. When boiled with rice it forms the dish called *Khichri*. Lentils contain 25·8 p. c. of albuminoids (legumin), 58·4 p. c. of starch, 1·3 of fat, 1·2 of fibre and 2·2 p. c .of ash. *Internally* it acts as a mild aperient, and *externally* a *paste* or *poultice* prepared from the seeds is a cleansing application to foul and indolent ulcers, and over small-pox ulcers also.

542. Leonotia Nepetaefolia (*Ben.*—Hejurchei. *Guz.*—Matisul. *Mah.*—Dipmal. *Tel.*—Ranabheri; Mula-

golimedi) a species of Labiatae is found throughout hotter parts of India. The *decoction of the leaves* (1 to 10) is given in intermittent fevers and during convalescence from acute diseases; with the addition of a little rum and lime juice it is a great tonic and febrifuge. The *ashes* of the flower-heads with curds is applied to ringworm and to allay itching in skin affections.

Leontodon Taraxacum—See Taraxacum Officinalis.

543. Lepeocercis Serrata or **Andropogon Serratus** or **A. Filliform** is a species found in Bengal and East Indies; its *root* is used as a carminative.

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544. LEPIDIUM SATIVUM.

(*N.O.*—Cruciferae.)

Sans.—Chandra sura; Ahaleeva. *Eng.*—The common or water cress. *Hind.*—Chansar; Halim; Hurf, *Guz.* & *Bom.*—Asaliya, *Duk.*—Halim, *Mah.*—Ahaleeva. *Sind.*—Ahera. *Tel.*—Adityalu. *Tam.*—Alivirai. *Can.*—Allibija.

Habitat.—This familiar shrub is cultivated as a culinary vegetable all over Asia. It is the garden cress of Europe and Asia.

Parts Used.—The seeds, leaves, root and flowers.

Constituents.—The seeds contain a volatile aromatic oil, the active principle and a fatty oil. Water-cress is found to contain iodine, iron, phosphates, potash and other salts, a bitter extract, water and much sulphur.

Action.—The seeds are aperient, diuretic, alterative, tonic, dimulcent, aphrodisiac, carminative, galactagogue and emmenagogue. The leaves are gently stimulant

and diuretic. The mucilage of the seeds allays the irritation of the mucous coat of the intestines.

Preparations.—Decoction, Infusion, Confection, Powder, Paste and Poultice.

Uses.—The *herb* and *seeds* should be freely used during the time of the year (spring ?) when scrofulous tendency is very prevalent. The seeds are useful in hiccups dysentery, diarrhoea and skin diseases caused by impurity of blood, in the form of a *decoction of the seeds* (1 in 20) or *cold infusion* (1 in 10), chiefly owing to its mucilaginous property. The seeds are recommended also for the dispersion of certain chronic enlargements of the spleen etc. The *emulsion* made by soaking or boiling the seeds in 8 times the weight of water is given as a drink to relieve hiccup, in doses of half to one ounce every half hour until complete cure—(Bhavaprakash). The seeds boiled with milk are administered "to cause abortion"—Bellew. A *powder of the seeds* mixed with fine sugar is a nice remedy for indigestion, diarrhoea and dysentery. A preparation made of the seeds, ghee and sugar is a common household remedy useful as a restorative in general debility. Another invigorating and nutritious tonic to relieve flatulence and to increase the secretion of milk among the lying-in (recently delivered) women is prepared by boiling the seeds in milk so as to form a thin soft mass, and adding to it sufficient sugar or jaggery to make it a confection; this is useful also in seminal debility, leucorrhoea, in cases of lumbago or any other pains about the loins through rheumatism. Still another invigorating and nutritious diet made of the *Ahaleeva* seeds is prepared by mixing together

sufficient quantity of the seeds, flowers of *tender* cocoanut and jaggery and heating them on fire till they melt and mix together and form a molten mass, which is then left to cool and made into boluses and kept for use. Small cakes or balls made for use as aphrodisiacs are made of a mixture of the seeds with several other aromatic, nutritious and strength-giving ingredients :—Take of 10 tolas of *Ahaleeva* seeds, 1 *pucca* seer of rolong (of wheat) and ¼ seer of *Udid* flour. Mix them all together and fry them in ghee and then melt them together in 1 *pucca* seer of ghee and add sufficient sugar, and also aromatics like *Bedana*, Almonds, *Charoli*, Cardamoms, nutmeg, mace *Pimpalmul* and prepare balls or cakes out of the molten mass. These are to be used during winter or cold weather. Water cress is said to be "Nature's remedy for Scurvy".

Externally a *Lep* or *paste* made of the seeds rubbed in water is applied to skin-diseases caused by impurity of the blood. *Bruised seeds* mixed with lime juice and spread on linen is an application for relief of internal inflammation and rheumatic pains. The seeds are said to be of service in all the diseases in which mustard is resorted to, and also regarded as more satisfactory rubefacient than mustard. A *paste* made of the mixture of *Ahaleeva* seeds 5 parts, Carbonate of soda 5, Curcuma longa (*Halad*) 4, and *Medalakdi* (Litsaea Sebifera) 5 parts, ground together into a paste with water is an application recommended for sprains, bruises and subluxation (dislocation). According to Honigberger this plant in the Punjaub was administered in cases of asthma, cough with much expectoration and bleeding piles. The *leaves* are made into a *salad* serviceable in scorbutic diseases—(Balfour). The *oil*

extracted from the seeds is also useful. *Flowers* are also much prized by some invalids being palatable and beautiful. They are spread over ordinary salads. The *root* is used in secondary syphilis and tenesmus.

Leptadenia Reticulata--See Gymnema Aurantiacum.

545. **Leptadenia Spartum** or Gymnema Spartum (*Sans.*--Mahameda) is an erect glabrous species with long twiggy branches found in Arabia and the North West Himalayas. Its tuberous root is larger than that of L. Reticulata; (*Gr.* *leptos*--peeled. *aden*—gland, from its appearance). It is eaten as a vegetable and used medicinally as a restorative.

Lespedoza Juncea.—See Indigofera Asphalathoides.

Lettsomia Nervosa —See Argyreia Speciosa.

546. **Leucus Cephalotes**; L. Aspera; L. Linifolia are small herbs with white cup-shaped calyx and flowers belonging to genus Labiatae (*Sans.*—Dronapushpi; Chitrapathrika; Chitrak-shupa. *Punj.*—Guldora. *Ben.*—Darunaphula; Halkasa. *Guz*—Kulannuphul. *Hind.*—Guma Madhupati. *Sind.*—Kubo. *Mah.*—Bahuphul. *Kon.*—Tumbo. *Tel.*—Tumni. *Tam.*—Tumbay keere. *Mal.*—Tumba) found throughout India from the Himalayas down to Ceylon. The flowers contain a small quantity of essential oil and an alkaloid. In action they are stimulant, expectorant and aperient; also emmenagogue. The juice of flowers is given in 5 to 15 minim doses with double the quantity of honey and a few grains of borax mixed together in nasal and laryngeal coughs and colds; and in intestinal catarrh, especially of children 6 drops of the juice with a little

powdered *kharik* (dry date) may be given. L. Aspera is given in amenorrhoea. The infusion is known as an insecticide. The juice is also sniffed up as a remedy for colds, headaches, and also in snake bites. The bruised leaves are applied locally in snake bites, scabies etc.

547. **Leucas Stelligara** (*Pers.*—Mishk-i-taramshi) is a plant of Persia. Its leaves are used medicinally and therefore imported into India. The drug is used as a stimulant, carminative and also as emmenagogue.

548. **Leucas Zeylanica** is a species found in Ceylon where its bitter root and the bitter and pungent leaves (or flowers ?) are used in skin diseases, especially scabies—(Chakrabarthy).

Lichin Odoriferous—See Parmelia Perlata.

Ligusticum Diffusum—See Seseli Indicum.

549. **Limnophila Gratioloides**; L. Gratissima; L. Intermedia; L. Elongata are plants belonging to Scrophularineae (*Sans.*-Ambuja; Amragandhaka. *Hind.*-Kuttra. *Ben.*—Karpur. *Mah.*—Ambuli. *Mal.*—Manganari) found throughout India in swamps. In action it is antiseptic. The odour of the fresh plant is agreeable and resembles that of camphor or oil of lemons. The *juice* of the plant is rubbed over the body in pestilent fevers. A *liniment* is made from the plant with cocoanut oil which is used in elephantiasis. Internally the juice is given in dysentery combined with cumin and other aromatics.

550. **Limonia Monophilla**; L. Acidicimma; L. Crenulata are the species of Rutaceae, (*Hind.*—Belsion. *Uriya.*—Bhentia. *Bom.*—Ranlimbi. *Mah. & Can.*—Kawat; Naibel. *Tel.*—Foralaga. *Kon.*—Sitran limbu) found on dry Hills in various parts of India. The *leaves*

in *infusion* or *decoction* are supposed to be a remedy for epilepsy. The *root* is purgative and sudorific and employed for the cure of colic and cardialgia. The *dried fruit* or berry is tonic; it diminishes intestinal fermentation, has the power of resisting the contagion of small-pox, malignant and pestilent fevers; and its red colored mucilage is considered an excellent antidote to various poisons.

Limonia Scandens—See Luvunga Scandens.

551. **Lindenbercia Urticæfolia** is a plant of Scrofularinae (*Mah*:—Dhol) common throughout India upon walls and banks. The *juice* is given in chronic bronchitis, and mixed with that of coriander plant it is applied to skin eruptions. It has a faint aromatic odour and a slightly bitter taste.

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552. LINUM USITATISSIMUM.

(*N. O.*—LINEAE).

Sans., Tel. & Can.—Atasi. *Eng.*—Linseed; Flax plant. *Fr.*—Lincultive. *Ger.*—Gemeiner Lein or Flachs. *Hind.*—Alsi; Tisi. *Ben.*—Masina. *Guz.*—Javas. *Mah. & Kon.*—Alashi. *Tam.*—Alashl-virai. *Pers.*—Zaghu; Tukhmizaghira; (oil) Roghani zaghira. *Arab.*—Bazarul-kattana.

Habitat.—The flax plant is native of Egypt, extensively cultivated in India, chiefly in Bengal, Behar and the United Provinces.

Parts Used.—The seeds, oil and flowers.

Constituents.—The seeds contain a fixed oil which consists of glyceryl combined with linoleic acid 30 to 40 p. c., mucilage 15 p. c. (6 p. c. in the testa), proteins, amygdalin, resin, wax, sugar and ash 3 to 5 p. c. The ash contains, sulphates and chlorides of potassium,

calcium and magnesium. The oil lies in the outer skin of tho seed and is soluble in boiling water. If ground into a meal the oil is soluble in cold water also. The linseed oil contains 10 to 15 p. c, of mineral substances chiefly phosphates of potassium, calcium and magnesium and about 25 p. c. of protein substances. Pure fresh oil is colorless; the commercial oil is dark yellow; on exposure to the air the oil dries up to a transparent varnish consisting chiefly of Linoxyn.

Action.—Demulcent, expectorant, diuretic and emollient. The seeds are said to be "aphrodisiac, hot and dry", and roasted seeds are said to be astringent. Flowers are said to be cordial. Poultices dilate the local blood vessels and relax the tissue and thereby relieve the tension and pain.

Preparations.—(Of the seed) :—Decoction and Infusion (1 in 30); Confection; Poultice; Smoke. Of the oil.—Emulsion; Liniment & Soap (Sapomollis).

Uses.—The mucilaginous matter contained in the seed is extracted by cold water and a viscid jelly-like mass is formed. The *mucilage* is used for dropping into the eye in irritable conditions of the conjunctiva. With honey it is prescribed in coughs and colds. The crushed seed or the *powdered seed cake* is called *Linum contusum* and popularly "linseed meal". The *fibres* of the stem after being prepared and bleached are manufactured into linen cloth which is cooling to the body and lessens perspiration. The best qualities of lint are made from the retted and finely carded fibre. The *stems* are burned as fuel in India. Fumigation with the *smoke* of the plant is recommended by Mahomedan writers for cold in the head.

and for hysteria. The tinder is used to staunch haemorrhages. The *infusion* of the seeds (1 in 32) known as *linseed tea*, and made with or without the addition of a little liquorice root (one to three of linseed) and sweetened with sugar is given internally as a demulcent and expectorant drink in cold, coughs, bronchitis etc., and irritations of the urinary organs, cystitis, gonorrhoea, strangury etc.; also used as injections to the vagina, bladder and rectum. An ounce of ground seed steeped in an ordinary tumblerful of cold water and kept overnight, stirred and taken next morning either cold or made hot and with a little lime juice added is said to be an invaluable drink for consumptives. The *fresh oil* dissolved in this way is very healing. One pint of this linseed tea may be taken three times daily before meals. The *poultice* made from linseed meal is a valuable soothing application to ulcerated and inflamed surfaces, boils, carbuncles, threatening abscesses etc., and to accelerate the maturation of torpid abscesses. It also makes a mild, continuous counter-irritant for deep-seated inflammations such as pneumonia, bronchitis, bronchopneumonia, pleuritis, pericarditis, peritonitis, arthritis, pelvic cellulitis etc. The counter-irritant effect of it can be increased by smearing its surface over with camphorated oil or by dusting over it a little of mustard powder, or by mixing the powder 1 in 16 of the linseed meal while preparing the poultice. Internally linseed oil is prescribed in "painter's colic" and other spasmodic affections of the bowels. In case of piles it is given in doses of 1 to 2 ounces morning and evening. One pint of linseed oil makes a good laxative *enemata*,

in impacted conditions of the rectum and lower colon. A mixture of equal parts of linseed oil and lime-water makes the popular remedy for burns and scalds known as "*carron. oil.*" It makes a good emollient application.

553. **Lippia Nodiflora** is a creeper belonging to genus Verbenaceae (*Sans.*—Vashira; Vasaka. *Ben.* & *Hind.*—Bakkan; Bhuiokra. *Guz.* & *Bom.*—Ratavlio. *Mah.*—Vekkan; Ratalio. *Tel.*—Bokkena. *Tam.*—Podu-thalai; Talaibodam. *Can.*—Nelahippali. *Mal.*—Katu-tippali) growing in moist ground found mostly in the southern parts of India. The plant is demulcent, resol-vent and diuretic. The *leaves* and *young shoots* are very bitter and astringent; they are given to children in diarrhoea, dysuria and indigestion in the form of *infusion* or *decoction* in doses of 1 to 2 ounces twice daily; also given in lithiasis and to women *after* the lying-in-state. In cases of gonorrhoea with scalding in the urine it is given combined with cumin or *suva*. *Chutney* made from its leaves and fruits is eaten to relieve the irrita-tion of internal piles. A *fumigation* by the compression of the plant between two red-hot bricks is said to give relief in inflamed and bleeding piles. A *paste* or *poultice* of the plant is applied to promote suppuration in boils, to swollen cervical glands and to erysipelas, and to chronic indolent ulcers.

554. **Liquidambar Orientalis** of the genus Hamamelideae (*Sans.*—Silhaka. *Eng.*—Liquid storax, Rose malloes. *Fr.*—Styrax liquide. *Hind.* *Ben.* *Guz.* *Can.* *Tel.* and *Mah.*—Silaras. *Pers.*—Asli; Lubhani; Meih-sila. *Arab.*—Miah sayelaha. *Tam.*—Neri-ariship-

pal. *Mal.*—Rasamalla) is a forest tree of Asia Minor, yielding liquid storax which is an article of import at Bombay. The balsam obtained from the trunk of the tree and purified is called "prepared storax". It contains not less than 20 p. c. of cinnamic acid, a volatile oil—styrol, styracin or cinnamate of cinnamyl, a resin, storesinol and cinnamic acid closely allied to benzoic acid into which it can be oxidized. In action it is stimulant, expectorant, diuretic, antiseptic, disinfectant and astringent. Mahomedan physicians regard it to be tonic, resolvent, and astringent. It is supposed to strengthen all the viscera chiefly the respiratory and urinary organs. The *liquid storax* obtained by boiling the inner bark of the tree in water is an aromatic, semi-fluid, opaque, grey balsam. It is used for perfuming medicinal oils, it is also useful in bronchitis, chronic coughs of the aged, and pulmonary affections; also in chronic catarrh of the genito-urinary organs, as cystitis, pyelitis, gonorrhoea, leucorrhoea etc. Dose is from 5 to 30 grains in *pill* or *emulsion*. As *ointment* (1 in 4) it is used for scabies, pityriasis and glandular swellings and to orchitis in which it is applied and covered with tobacco leaves It is applied over the abdomen of children to relieve colicky pains and to the chest in throat and lung affections with copious expectoration. It forms an ingredient of the compound tincture of Benzoin of the B P. The following are simple successful remedies recommended for use:—(1) Take of liquid storax $3\frac{1}{2}$ drs, Opium 15 grs., *Zunde-bidastara* (castor-fibre or castoreum $1\frac{1}{2}$ drs; mix and add sufficient mucilage to form a pill-

mass; dose is from 5 to 10 grains ; used in chronic bronchitis, spasmodic cough, asthma, and chronic coughs of the aged. (2) Take of liquid Storax 10 parts, Hemp leaves 1, Gall-nut 3, Saffron 1, and liquorice 1 part. Mix and make a powder. Next add Kokum butter and make pessaries; used in leucorrhoea.

555. **Litsaea Sebifera** is a tree of the genus Laurineae (*Hind.*—Garbijaur. *Ben.*—Kukur-chata. *Bom. Mah.* & *Kon* :—Maida-lakri (the bark). *Tam.*—Mushaippe yetti (the bark). *Tel.*—Narraalagi; Meda. *Arab.*—Magha-thi-Hindi. *Pers.*—Khilza) common in Upper India especially in Bengal. The bark known as *Maida lakri*, contains mucilage or Laurotitanine—an alkaloid producing tetanic spasms in animals. The *bark in decoction* or *infusion* is a popular remedy in Bengal for diarrhoea. It is esteemed as a demulcent and used in dysentery, owing to its feebly balsamic and mucilaginous nature. Externally it is used as an emollient application to bruises, sprains, rheumatic and gouty joints.

556. **Lodoicea Sechellarum**. (*Eng.*—The sea cocoanut. *Fr.*—coco-de-mer. *Hind. Guz.* & *Duk.*—Daryaka-nariyal. *Bom. Kon.* & *Mah.*—Jahari-naral. *Tam.* & *Mal.*—Kadala-tangay. *Tel.*—Samudrapu-tenkaya. *Arab.*—Narjil-banri. *Pers.*—Narjil-i-Darayai) is a palm growing in the Seychelles, but its fruit is obtainable on the Bombay side. The *fruit* or *nuts* are of great size, frequently 40 to 50 lbs., in weight. They were formerly cast ashore on the West coast of India and Ceylon from the Indian Ocean. They are now imported and used to some extent by the natives of North-

Western India as food and medicine being regarded as preservative and alexipharmic. The *kernel* is used in India as a tonic and *paste* made of it in conjunction with the powdered horns of Sambhar deer and the seeds of strychnos nuxvomica is applied to enlarged glands Vaidyans consider it useful in reducing the quantity of sugar in the urine in cases of diabetes mellitus and they give a decoction of it in doses of 3 ounces three times daily.

557. **Longifolium Ochrocarpus**, the seeds of which are known as Cytrus seeds is used in medicine. *Powder of the seeds* is given with cow's milk in menstrual disorders to restore the normal flow. It is said to promote conception among women considered to be barren.

558, LUFFA ACUTANGULA; Cucumis Acutangulus.

(*N. O.*—CUCURBITACEÆ.)

Sans.—Dhamargava. Jhingaka. *Hind.*—Turai. *Eng.*—Ribbed luffa. *Ger.*—Scarfeckige Gurke, *Nepal.*—Ram-torai. *Sind.*—Turi. *Uriva.*—Junhi. *C. P.*—Dorka. *Ben.*—Ghosha lata. *Guz.* & *Mah.*—Sirola. *Tel.*—Beerakaya. *Tam.*—Peerakai. *Can.*—Heere-kay. *Mal.*—Peechhakam ; Cheru-peeram. *Kon.*—Ghosale.

Habitat.—Cultivated in many parts of India.

Parts Used.—Fruit, seeds, root and leaves.

Constituents.—The dried fruit deprived of seeds contains a principle allied to *Colocynthin* and a gelatinous principle named *Luffein*. The seeds contain a bland fixed oil.

Action.—The fruit is demulcent, diuretic and nutritive; the seeds especially the ripe ones have emetic

and purgative properties; the emetic property is believed to reside in the kernel.

Uses.—The *fruit* is a well-known culinary vegetable. Medicinally, *infusion of the ripe fruit* (1 in 80) is used in doses of one to two ounces, or 20 to 30 grains of the *dried kernel* is administered. The *oil of the seeds* is used in cutaneous complaints and the *root* is laxative and used in dropsy. The *leaves* are applied locally in splenitis, haemorrhoids and leprosy. The *juice of the fresh leaves* is dropped into the eyes of children in granular conjunctivitis, also to prevent the lids from adhering at night on account of excessive meibomian secretion. The juice of heated L. Acutangula is good in adrenal variety of diabetes.

559. **Luffa Aegyptica** L. Pentandra; L. Cylindrica; L. Patola L. Riscada. (*Sans.*—Raja-Kosataki; Dirgha-patola. *Ben.*—Dundhul. *Eng.*—Smooth luffa; Wash-sponge; Patola. *Hind.*—Ghiaturai. *Nepal.*—Palo. *Sind.*—Liasada. *Assam.*—Bhat karola. *Bom.*—Turi. *Tel.*—Nunibeera) are hairy climbing herbs extensively cultivated in several parts of India. The *seeds* are said to be emetic and cathartic like L. Acutangula. They yield a dark or reddish brown oil. The *fruit* is edible. Medicinally it is described as "cool, costive, demulcent, producive of loss of appetite and excitive of wind, bile and phlegm"—(N. N. Sen Gupta).

560. **Luffa Amara** or L. Plucketiana or L. Foetida is a climbing plant (*Sans.*—Katuki; Kratavedhana. Tikta-koshataki. *Fr.*—Luffe amere. *Ger.*—Bittere Luffe. *Hind.*—Karvi-turai. *Ben.*—Teetadhudaka. *Bom.*—Kadu-sirola. *Guz.*—Kadu ghisodi; Ran-turai. *Tel.*—Verri-beera;

Sendubeerkai. *Tam.*—Peppirakam. *Can.*—Kahi-keera. *Mal.*—Athanga. *Kon.*—Kadu-ghosali) found growing mostly in Southern India and Bengal. Every part of the plant is remarkably bitter and the fruit is violently cathartic and emetic. A *powder of the fruit* is used for rubbing on the swollen haemorrhoids. The *kernel of the seeds* is said to be a safe, sure and efficient remedy for dysentery, equal to ipecacuanha. In smaller doses it is expectorant and demulcent as it contains albumen and oil. It is rubbed and mixed with water, forming a green ish white emulsion, which is used for administration. Dose —as emetic, 20 to 30 grains; as nauseant, 10 to 15 grains; as demulcent and expectorant, 5 to 10 grains. The *juice of the roasted young fruit* is applied to cure headache ; the juice or the *pulp of the fruit* is also applied to different kinds of bites and also administered internally ; it causes vomiting and purging through which the poison is said to be eliminated. The *dried fruit* is used as a *snuff* in jaundice or its *watery extract* is dropped in the nostrils, or the fruit ground with *pipli* and mustard into a fine powder is used as snuff. For decayed or carious teeth *cigarettes* made of the fruit or seeds are smoked. In hemicrania a *powder* of the roasted fruit carefully sniffed causes a flow of fluid from the nostrils and relieves the headache. The *root* with equal parts of Jasud root (Hibiscus Rosa Sinensis) and Hemidesmus is given with milk, cumin and sugar in gonorrhoea. In swellings the *leaf juice* withsugar is given. *Infusion* of the fresh stalks (1 in 32) is a powerful diuretic.

561. **Luffa Echinata** or L. Bindaal. (*Sans.*—Koshataki; Vratakosha. *Hind.*—Bindaal; Ghagerbel;

Kukurlata. *Ben.*—Ghoshalata. *Sind.*—(seeds) Jang-thoree. *Bom. Guz. & Mah.*—Kukadvel; Vapala; Deodangri) is a species found in N. W. India, Guzerat, Sind, Bombay and East Bengal. It is bitter and stomachic in small doses; in large doses it is emetic and drastic purgative. The *fruits* or even *stems* are used as *tincture* (1 in 20) or hot or cold *infusion* in the treatment of ascites; and also in enlarged liver and spleen. But here it is to be stopped when it produces diarrhoea. Dose of the tincture is 10 to 20 minims. The cold infusion is made by infusing two bruised fruits in a pint of water. In obstinate cases the dose is increased gradually. Externally the infusion is used as a stimulant antiseptic in carbuncles and other unhealthy ulcers. In congestion of the brain causing intense headache and in jaundice the infusion is used as an errhine, causing profuse discharge of mucus from the nostrils. But it is not a safe sternutatory in atheromatous degeneration of blood vessels as it increases blood pressure from reflex irritation. Under the name of *bindaal* it is extolled as a remedy for spleen affections, especially in malarious enlargement of that organ. "In dropsy supervening an enlargement of the liver and spleen from malarious origin", a hot infusion (1 in 80) in doses of 1 to 2 ounces three times daily combined with nitro-hydrochloric acid, has been found to be a powerful diuretic. In many cases of ascites, this drug has given more satisfactory results as diuretic than many other diuretics. In infantile cirrhosis of the liver the tincture, as a purgative and diuretic, in the commencement of the cirrhosis, has been found very useful—(Dr. Hem Chandra Sen). Sanskrit writers

describe the drug as "expelling *pitta* and *kafa* and removing piles, swellings, jaundice, phthisis, hiccup, worms and fever." The fruit is considered in North India to be a powerful remedy for dropsy. S. Arjun states that the fruit has purgative properties. In Guzerat it has a reputation on account of its bitter properties and is an ingredient in compound decoctions. In the Konkan a few grains of the bitter fibrous contents of the fruit are given in infusion for snake-bite. In putrid fevers the infusion is applied to the whole body, and in jaundice it is applied to the head and also given internally; the infusion has also a reputation as a remedy for colic.—(Watt).

562. **Luffa Tuberosa** (*Mah.*—Kadavanchi) is a species found in Deccan, Mysore and Konkan. As regards its medicinal effects Dr. Lyon states that when he was the Chemical Analyser to the Govt., of Bombay, *Kadavanchi* tubers had been three times sent to him within a period of 4 years, as having been used to procure abortion.

563. **Luvunga Scandens** of the genus Rutaceae. (*Sans.*—Lavangalata. *Ben.*—Lavangaphul. *Bazaars.*—Kakkola) is a climbing annual glabrous shrub met with mostly in Eastern Bengal, Assam and Khassia mountains. The *berries* are used in preparing a perfumed medicinal oil (*Kakkolaka*). They form one of the 8 constituents or group of eight medicines called "Asta varga". The Sanskrit names of the other seven plants are:— 1) Kshirakakkoli (a pseudobulb from Nepal, quite different from Kakkola, (2) Rishabha. 3) Jivaka 4) Meda. 5) Mahameda. 6) Riddhi. 7) Vriddhi.)

564. **Lycopersicum Esculentum** of the genus Solanacea (*Eng*.—Tomato. *Hind*.—Bilatee Baigun. *Bom*.—Goot-Baigun. *Mah & Kon*.—Tambuta. *Can*.—Chapperbhende. *Tam*.—Seemay Tekkali. *Cing*.—Tekkali.) is first of American origin, then grown in Europe and thence to India. The *pulp* and *juice of the tomato* is digestible and a mild aperient, a promoter of gastric secretion, and a blood purifier; also considered to be an intestinal antiseptic as it has a cleansing effect in the enteric portion of the alimentary canal. It is said to be useful in canker of the mouth "nurses sore mouth" etc. Dose of the fluid extract is ½ to 1 drachm. *Dried tomato juice*, even after 14 to 20 months was found to be active. Dose is about 1 gramme or 15 grains. *Tomatoes* are rich in all the three vitamines and are best eaten raw or mixed in a salad. There are many ways of cooking tomatoes. They may be cut in slices and fried in butter, or baked in an earthenware dish with a little butter, and placed on toast; or scalded to get the skins off, and then stewed with butter and seasoning; or bruised and cooked with macaroni, rice, eggs or bread crumbs. Fried in butter, and mixed with hard boiled egg and seasoning, they provide an excellent paste for sandwiches. *Tinned tomatoes* (like all tinned fruits) however retain the vitamin "C" and the juice of tomatoes is sometimes used in Europe and America as a substitute for orange juice for children fed on pasteurised milk. The dose for a child of three months is about two tablespoonfuls. Tomatoes stimulate torpid liver and are good in atonic dyspepsia. Tomato contains citric and malic acids, some salts, water and oxalate of potash. It is not therefore suited to those

who suffer from a tendency to gout or uric acid disease. But it is invaluable to those who have a tendency to biliousness as it promotes the flow of bile, and also in cases of bronchitis and asthma. Briefly the medical and food value of tomato may be stated thus :— (a) Tomatoes are the richest of all foods in the vitamines; (b) they are the most wonderful and effective blood cleanser of all foods known to man ; (c) they are the richest of all vegetables in the natural health acids which keep our stomachs and intestines in condition ; (d) they are the most extraordinary corrective for kidneys, a gentle, natural stimulant, which helps to wash away the poisons which cause disease and contaminate our systems.

565. **Lycopodium Clavatum** belonging to genus Lycopodiaceae.—the Club Moss family (*Eng.*—Clubmoss ; Vegetable sulphur ; Wolf claw ; *Kon.*—Bendarli) is found universal in cold, temperate and warm climates. It contains a bland fixed oil 48 p. c., cane sugar 2 p. c., a volatile base (methylamin) and ash 4 p.c In action it is diuretic, demulcent, antispasmodic and emmenagogue. It is used in the form of *tincture* (1 in 10), lycopodium spores being first treated with ether ; dose of the tincture is from 15 to 60 minims, and of the *spores in powder*, it is from 10 to 30 grains. It is generally given in rheumatism, epilepsy and pulmonary disorders. It is invaluable in irritable bladder, cystospasms (not dependant on organic disease or foreign body), frequent micturition and spasmodic retention of urine in children. It is very beneficial especially in nocturnal micturition in children or adults. *Externally* the *spores*

are employed owing to their absorbent qualities, in the form of *powder*, as a protective and absorbent in erysipelas, eczema, herpes between the thighs and armpits of infants; also it is used as a pill-excipient in coating pills to render them tasteless and as a powder for hygroscopic pills to prevent them from adhering together.

Lythrum Fruticosum—See Woodfordia Floribunda.

566. **Macaranga Roxburghi** belonging to genus Euphorbeaceæ (*Can.*—Chandkal. *Mah.*—Chandwar. *Tam.*—Vattekanni. *Tel.*—Boddichettu. *Mysore*:—Chutha kanni. *Kon.*—Chandivadio) found in the Deccan, in the Circars and on the Ghats from the Konkan to Travancore. The *gum powdered* and made into a *paste* is reckoned a good external application for venereal sores—(Drury). The country people use the following in *Jergende* (enlarged spleen):—One part of the young shoots of *Kharoti* (Ficus Asperimma) are sprinkled with hot water and the juice extracted; in this is rubbed down two parts each of the barks of both trees. The preparation is administered twice a day in doses of $\frac{1}{8}$ of a seer—(Dymock).

567. **Mærna Arenaria** of the genus Capparideæ (*Eng.*—The earth sugar root. *Tel.*—Puta-tiga. *Tam.*—Pumichakarei. *Guz.*—Vaka) is a large woody climber, found in Southern and Central India, and Ceylon. The part used *viz.*, the earth sugar root of the Tamils has been known in Southern India for centuries. The root slightly resembles liquorice root in appearance and taste. It is said to be used as an alterative, tonic and stimulant. From an analysis of the drug made by Hooper it was found to

contain ordinary plant constituents and a quantity of sugar.

Malachra Capitata—See Hibiscus Tiliaceus.

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568. MALLOTUS PHILIPPINENSIS or Croton Philippinensis; or C. Punctatus; C. Coccineum.

(*N. O.*—EUPHORBIACEAE.)

Sans.—Kampilla; Kambha; Rechanaka. *Eng.*—Monkey Face tree; Kamala dye. *Hind.*—Kamala. *Ben.*—Kamalaguri. *Cash.*—Kamila. *Mah.*—Shendri. *Arab.*—Kinbila. *Pers.*—Kanbela, *Guz.*—Kapilo. *Tel.*—Kunkuma. *Tam.*—Kapila. *Kon.*—Komati. *Can.*—Vasare; Chandrahittu.

Parts Used--The glands and hairs from the capsules.

Constituents.--Resins 80 p. c., tannic acid, gum, volatile oil,—*rottlerin* the active principal constituent, albuminous matter, colouring matter, cellulose and ash 4 p. c. The resins contain colouring matter.

Action.--Cathartic and anthelmintic, also aphrodisiac and lithontriptic. In full doses it is violently purgative causing nausea and griping.

Uses.—Kamala powder is used as an orange-brown dye, especially for silk. In medicine *Kamala powder* is reputed remedy for taenia or tapeworm. The dose for an adult is about two drachms suspended in mucilage, syrup, honey, gruel or a little aromatic water. It may also be given in the form of a night draught made of kamala powder 15 grs., mucilage of tragacanth 4 drs., syrup of ginger 1 dr. and clove water 1½ ounces followed next morning by a brisk purge of castor oil. It is

said to kill and expel all the intestinal worms as well as the threadworms. It may also be given in the form of a liquid extract. Should the first dose not prove successful it may be repeated after the interval of a week. Kamala taken internally is said to remove leprous eruptions; and also *externally* it has been used in skin diseases. Kamala powder mixed with its eight times of sweet oil forms a useful local application for ringworm, pityriasis and freckles. The following are useful compound powders for use in worms:—(1) Take of Kamala 5, Crataeva Nurvala or C. Religiosa 4, Rose buds 5, Chebulic myrobalans 4 and Rock salt 4 parts. Mix and make a powder. Dose.—grs. 30 to 40, in treacle. (2) Take of kamala, baberang seeds, chebulic myrobalans, *Yavakshara* (impure carbonate of potash) and rock-salt, equal parts. powder and mix. Dose.—about a drachm with butter-milk—(Chakradatta).

569. **Malva Parviflora** of the genus Malvaceae (*Hind.* & *Punj.*—Narr; Sonchal) is found in N. W. Himalaya, Sind, Punjab and upper Bengal. The seeds are used as a demulcent in coughs and ulcers in the bladder—(Watt).

570. **Malva Rotundifolia** a plant of the same genus (*Eng.*—Country mallow. *Hind.*—Kubazi. *Sind.*—Chanderee. *Punj.*—Sonchala. *Mal.*—Katkada-lekka. *Kon.*—Kadu-chanyapallo. *Can.*—Kadu-kadle-soppu. *Tam.*—Kattu kadalai. *Tel.*—Trikala malle) is generally met with in the Deccan and Mysore Provinces. The *leaves* are mucilaginous and emollient when applied as a *poultice* or *paste* in scurvy, piles etc. The *seeds* are demulcent and prescribed in the form

of *powder* in cases of bronchitis, cough, inflammations and ulcerations of the bladder and in haemorrhoids. They are also externally applied in the form of *paste* in skin diseases.

571. **Malva Sylvestris** or M. Vulgaris is a herbaceous plant (*Eng.*—The common mallow. *Hind.*—Vilayati-kangai. *Pers.*—Khitami-i-kuchaka; Nan-i-kulagh (crow's bread). *Arab.* & *Bom.*—Khubazi. *Kon.*—Patari) growing on the temperate Western Himalaya, from Kumaon to Cashmere and the Punjab. Like other malvaceous species it—especially the fruit, abounds in mucilaginous principles. It is prescribed in pulmonary affections as well as those of the urinary tract. The *seeds* are employed internally in *decoction*, simple or compound as a demulcent. It is generally used as a substitute for Marsh mallow. A *decoction* made of equal parts of common mallow, marsh mallow, seeds of common cucumber seeds of water melon, and *Sonfa* (Indian sweet fennel seeds), is used in urinary complaints and gonorrhoea. Dose is ½ to 1 ounce. The *leaves* are made into a *poultice* as an emollient external application.

Mammea Asiatica—See Barringtonia Speciosa.

572. **Mandragora Officinalis; M. Autumnalis; M. Vernalis or Atropa Acuminata; or A. Mandragora** is a species of Atropaceae (*Sans*—Putrada; Lakshamana; Raktavindu. *Eng.*—Mandrake. *Hind.*—Lakmani, Bhagener. *Ind. Bazaars.*—Lebruj. *Pers.*—Mardami; Giatya bruz. *Arab*—Astrang; Dastam Haryah. *Tam.*—Katav-jate. *Malay.*—Lufahat) found in N. India, Central Asia and South of Europe. It

contains a basic substance isomeric with hyoscyamine known as Mandragorine. In action it is sedative, narcotic and cholagogue. The *root-bark* and *leaves* are local anaesthetic and applied to painful swellings. It resembles belladonna in action, but weaker. Like datura it is said to increase the sexual excitement in both sexes.

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573. MANGIFERA INDICA; M. Montana; M. Domestica.

(*N. O.*—ANACARDIACEAE.)

Sans.—Amra; Chuta. *Eng.*—Mango tree. *Fr.*—Manguier. *Ger.*—Mangobaum. *Hind. Guz. & Ben.*—Am. *Mah.*—Amba. *Bom.*—Thayet. *Tel.*—Mamidi; *Tam.*—Mamaram. *Can.*—Mavina-mara. *Mal.*—Mavu. *Pers.*—Amba; Naghzak. *Arab.*—Ambaj. *Cing.*—Mangga; Sunda. *Malay.*—Mampalam. *Kon.*—Ambo.

Habitat.—This tree is indigenous to India and cultivated in many varieties almost everywhere in the plains.

Parts Used.—Fruit, kernel, leaves, flowers, bark aud gum.

Constituents.—The dried unripe peeled fruit contains water 21 p. c., watery extract 61·5 p. c., cellulose 5 p. c., insoluble ash 1·5 and soluble ash 1·9 p. c. The soluble ash contains potash, free tartaric, citric, and malic acids. The ripe fruit contains yellow colouring matter, chlorophyl product soluble in ether, bisulphide of carbon and benzol and a trace of gallic acid with citric acid and gum. The bark contains tannin; the kernel inside the stone or seed contains gallic acid and tannin, fat, sugar, gum and ash. The pulp of the ripe fruit

contains a trace of gallic acid with citric acid and gum. The gum of the tree contains besides moisture and ash, 71 p. c., of sugars—galactose and pentoses.

Action.—The fruit is diaphoretic, astringent and refrigerant; the ripe one is slightly laxative and diuretic, nourishing and invigorating. The unripe fruit is acid, astringent, stomachic, and antiscorbutic. The bark is astringent and tonic. The bitter gum resin from the bark is astringent. The kernel is astringent and anthelmintic. The *Am-chur* so popular among Indian troops is a valuable antiscorbutic.

Preparations.—*Sherbats*, Custards, Preserves, Confections, Pickles, Curries, *Chutneys*, *Amchur* etc., of the fruit; Fluid extract and Infusion of the bark; Powder and Decoction of the dried flowers; Decoction and Powder of the kernel and of the leaves; Fumigation of the burning leaves; and Ashes of the midribs of the leaves. Powder of the kernel; Gum exuding from the bark of the tree; Extract of the bark.

Uses.—The mango is the most delicious of Indian fruits. The *ripe fruit* is very wholesome and nourishing and useful in nervous and atonic dyspepsia and constipation. A *confection* prepared out of the juice of the ripe fruit, with the addition of sugar and aromatics, is a nice restorative tonic. A confection made of the baked pulp of the unripe fruit mixed with sugar is taken internally in times of plague or cholera; and also rubbed over the body as a prophylactic. A fluid *extract* either from the fruit or the rind is an astringent tonic to mucous membranes. Its effects are great in diphtheria and other malignant throat diseases. Locally it is a useful application in

haemorrhages. The *juice of the unripe fruit* is applied to cracks in the sole or heal caused by cold. The *rind ground with milk* and a little honey added is given in bleeding dysentery. The *rind of unripe fruit* is cut into pieces, fried in ghee and mixed with sugar and the whole is made into a pill mass. Pills made of this are given in menorrhagia. The rind of the unripe green mango $2\frac{1}{2}$ tolas, rubbed into an emulsion with curds is a remedy for cholera morbus. In cases of asthma, diarrhoea, chronic dysentery, hematemesis, menorrhagia, leucorrhoea, bleeding piles, round worms etc., powdered seed or kernel is given in doses of about 20 to 30 grains with or without honey. In dysentery with slime the *kernel ground down with curds* forms a nice remedy. In the diarrhœa of pregnant women the *kernel is fried* and given for eating. The *juice of the kernel* is sniffed to stop nasal bleeding. Decoction of the kernel either alone or in combination with *bela* and ginger is prescribed in diarrhœa—(Sarangadara). Dose is 1 to $1\frac{1}{2}$ drs. In chronic dysentery the *kernel* combined with a little *opium* and some stimulant aromatic drugs is very useful. The *juice of the fruit dried* in the sun so as to form thin cakes is used as a relish; and as an appetising diet, it is used in the form of a *chutney*. The *Amchur* or *Ambose* so popular in India as an article of diet consists of green mangoes skinned, stoned, cut into pieces, and dried in the sun; owing to its acidity (citric acid) half an ounce of it is said to be equivalent to an ounce of good lime juice; so it is very useful in scurvy. Sweet mango *pickle*, freely eaten with the diet, is an excellent form of administering an antiscorbutic like *Am-chur*. A *fluid extract* or the *infusion*

of the bark is used in menorrhagia, leucorrhoea, bleeding piles and in cases of haemorrhage from the lungs; also in nasal catarrh and for lumbrici. A *cold infusion* (1 in 8) of the powdered barks of Mangifera Indica, Eugenia jambolana and Terminalia arjuna taken in equal parts is prescribed in doses of 1 to 2 ounces in diarrhoea and in bleeding from internal organs. A *decoction* of the same ingredients is also useful in these diseases in doses of 1 to 1½ drachms mixed with *conjee* water, or the *juice of the fresh bark* is administered with white of egg and a little opium. The juice of the bark 4 tolas mixed with 1 tola of lime water given for seven days is a sovereign remedy in acute gonorrhoea. A fluid extract of the bark or rind (1 in 12) is very beneficial in doses of one teaspoonful every hour or two mixed with two ounces of water in cases of haemorrhage from the lungs, the uterus or intestines. A decoction (1 in 20) made of the barks of Mangifera Indica, Spondias mangifera and Eugenia jambolana and re-boiled with the addition of rice (1 in 20 of the decoction) so as to form an emulsion is given daily to cure chronic dysentery. The leaf juice is useful in bleeding dysentery. A mixture consisting of two tolas of the juice, one tola each of honey and milk and ½ tola of ghee is a nice remedy. The milky fluid obtained from the leaf or bark is a useful application to cracks of the foot etc. A *decoction of the leaves* with a little honey added is given in aphonia or loss of voice. The *midribs* of the leaves *calcined* are used to remove warts on the eyelids. The tender *leaves dried* and made into a *powder* are useful in diabetes. The *smoke* of the burning leaves is said to have a curative effect in some affections of the throat, in hiccup, etc. The *ashes* of the leaves are a

popular remedy for burns and scalds. The *dried flowers in decoction* or *powder* are useful in diarrhoea, chronic dysentery and gleet. The powder is used for fumigation against mosquitoes, The *gum* of the tree is applied with benefit to cracked feet. The *gum-resin from the bark* is used in catarrhs and mixed with lime juice it is applied to scabies and other cutaneous affections.

574. **Mangifera Sylvatica** of Anacardiaceae (*Sans.*—Koshagru, *Mah.*—Koshamba) is found in Konkan. The *oil* got *from the seeds* is insecticide or vermicide. The *fruit* (ripe) is stimulant appetiser, nutritive or strength giving. The *oil* from the seeds is given in hot water as cathartic. It is applied to leprous sores and ulcers generally as parasiticide. The *bark-juice* with *Samudra-phal* ground into it, forms a useful *Lep* or application to bruises, abrasions etc.

575. **Manisuris Granularis** belonging to Gramineae (*Sans.*—Phalangini. *Hind.*—Irinpali *Ajmere*:—Kangni. *Udaipur.*—Dhaturaghas. *Chanda.*—Aginaligadi. *Berar.*—Ratop) is cultivated throughout the hotter parts of India. In Behar it is prescribed internally in conjunction with a little sweet oil in cases of enlarged spleen and liver.—(Ainslie).

576. **Maranta Arundinaceae** of the genus Scitamineae (*Eng.*—West Indian Arrowroot. *Hind.*—Tikhor. *Ben. & Bom*:—Ararut. *Tam*:—Kuamau. *Can.*—Kuvehittu. *Mal.*—Kuva. *Burm.*—Pen-bava. *Kon.*—Aararoot) is cultivated in Eastern Bengal, the United Provinces, and in Madras. The *arrowroot* obtained from the rasped tubers of this plant is a pure starch, and is chiefly used as an invalid diet in the form of *Conjee*. It

should be prepared fresh when required. It is nutrient and demulcent. The arrowroot obtained in the bazaars is frequently adulterated with potato starch, which may be detected by the microscope, the granules of potato starch being larger.

Maranta Galanga—See Alpinia Galanga.

Marjorana Hortenais—See Origanum marjorana.

577. Marrubian Vulgare; M. Hamalalium; M. Germanicum are species of Labiateae (*Eng.*—White horehound; East Indian Peppermint. *Ind. Bazaar.*—Farasiyun, Hastushat-el-kalb (dog's herb) indigenous to Western temperate Himalaya, Cashmere etc. The *herb* contains a volatile oil, a bitter glucoside called "Marubien", resin, tannin and fat. It is used in *infusion* (1 in 20) in one to two ounce-doses or *juice* or *succus* 1 to 2 drs; as stimulant, expectorant, resolvent, anthelmintic and alterative, in coughs, chronic bronchitis, dyspepsia, jaundice, phthisis, amenorrhoea, chronic rheumatism, hepatitis, cachexia etc.

578. Martynia Diandra of Pedaliaceae (*Eng.*—Tiger's claw; Devil's claw. *Guz.*—Vichchida. *Mah.*—Vinchhu) is met with in Concan. A paste of the nut is used as a local sedative and is said to have a curative effect when applied to bites of venomous insects, such as scorpions etc.

579. Mattricaria Chamomilla; M. Suaveolens, species of the genus Compositae (*Punj.*, *Hind.* & *Ben.*—Babunphul) are met with in the upper Gangetic plains and the Punjab. In Persian works the *flowers* are described as stimulant, attenuant and discutient, and that

the odour of the flowers induces sleep and drives noxious insects. They say that *Chamomile tea* applied to the genitals has a powerful stimulating effect. *Chamomile oil* is used externally in rheumatism in Guzerat. The flowers contain a blue essential oil and a resin. They form a perfect substitute for the European Chamomile. For further uses etc., see Anthemis Nobilis.

580. **Matthiola Incona** is an erect hairy herb belonging to Cruciferae (*Punj.* & *Sind.*—Todri-safed) cultivated in the gardens of Northern India. The seeds are of 3 kinds, white, red, and yellow. They are said to be aphrodiasic (Stewart); used in infusion in cancer. Mixed with wine it is given as an antidote to poisonous bite.—(Dr Emerson).

581. **Meconopsis Aculeata** & M. Nipalensis, both Himalayan species have had powerful narcotic properties attributed to them, especially to the roots. But the drug is still open for investigation.

582. **Melanleuca Leucadendron**; M. Cajuputi or M. Minor, belonging to genus Myrtaceae (*Eng.*—The Cajuput Tree. *Hind.*—Kayaputi. *Ben.*—Cajuputi. *Bom.*—Kayakuti. *Tam.*—Kijapute) is indigenous to the islands of the Indian Archipelago, but cultivated in India. The *oil* distilled from the leaves is imported from Java, Manilla, and other islands. The *oil* contains bihidrate of Cajuputine or Cajuputol about $\frac{2}{3}$ and several terpenes; also acetic, butyric and valerianic ethers of turpeneol. *Cajaputol* is obtained from the crude oil by distillation. *Kajaputi-ka-tel*, as the crude oil is called, is of a pale, bluish-green colour, pungent odour and bitter aromatic

taste. The green colour is attributed to chlorophyl or to copper present in it. The *oil* is a powerful stimulant sudorific, carminative, diuretic and antiseptic. It is given in two to five minim doses in flatulence and colic, choleraic diarrhoea, hysteria, hiccup, nervous vomiting, dyspnoea, dysmenorrhoea, neuralgia. rheumatism and low fevers; it is used in the form of a *spirit* in doses of half to two fluid drachms. *Externally* it is parasiticide and anthelmintic, rubefacient and counter-irritant to the skin. It is always mixed with stimulant liniments such as croton (of which it forms an ingredient). It is applied to rheumatic pains in the joints or muscles in paralysis and neuralgia. With olive oil it is dropped into the ear in deafness and ear ache. It is a domestic remedy for all muscular pains and in the chronic forms of pityriasis, psoriasis and eczema. The following makes a good and useful liniment.—Cajeput oil, half a drachm; castor oil one drachm, olive oil, 4½ drachms. If a stronger stimulant for rheumatism is required use this.—Soap liniment, camphor liniment, and cajeput oil, of each an ounce; mix and rub well in.

583. **Melanorrhoea Usitata**, of the Natural Order Anacardiaceae, (*Eng*—The Black Varnish tree. *Burm.*—Thitsi. *Manipur.*—Kheu. *Tel.*—Soothan) is a forest tree allied to the Dipterocarpus species, found at Prome and neighbouring districts in Burma. This tree is the source of an oleo-resin known as the black varnish, extensively used as a lacquer and to some extent as a medicine, It contains about 85 p. c. of urushic acid. The *oleo-resin* is used in Burma in combination with honey as an anthelmintic. If it be too much handled it causes erysipelas-

like swellings among some, which are cured by applying an infusion of teak-wood.

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584. MELIA AZADIRACHTA.

(*N.O.*—MELIACEAE.)

Sans.—Ravipriya ; Vembaka ; Vranashodhakari. *Eng.*—The Neem or Margosa tree ; Indian Lilac. *Fr.*—Azadirae d'Inde ; Margousier. *Ger.*—Indischer zedrach. *Hind. Duk. Punj & Ben.*—Nim. *Guz.*—Limba. *Mah.*—Kadunimba. *Tel.*—Vepa. *Tam.*—Vembu. *Can.*—Bevina-mara. *Mal.*—Veppu. *Kon.*—Beva-rooku. *Cing.*—Kohumba. *Burm.* Tamabin ; Kamakha. *Malay.*—Dawoon Nambu ; Baypay.

Habitat.—Indigenous to and cultivated nearly all over India and in Burma.

Parts Used—Every part of the plant.—Bark, root-bark, young fruit, nut or seed, flowers, leaves, gum and toddy or sap.

Constituents.—The bark contains a bitter principle named "margosine"—a neutral, amorphous resin believed to reside in the inner bark or liber. The leaves contain a small quantity of a bitter substance of a similar character but much more soluble in water. This substance also contained in the bark is a hydrate of the resin which it closely resembles in its properties. The seeds contain about 10 p.c. of a yellow fixed oil which is extracted by pressure. The toddy or sap contains glucose, sucrose, gums and colouring matter, proteids and ash, containing potassium, iron, aluminium, calcium and carbon dioxide. Neem oil contains (margosic acid ?) glycerides of fatty acids (soluble 3.5 p.c., insoluble 89.1 p.c.), butyric acid and a trace of valeric acid detected as volatile acids, a small

quantity of neutral resin and two other acid resins and a small quantity of an alkaloidal substance. The cake left after expression of the oil was found to contain, a neutral principle, organic matter 83 to 84 p.c., moisture, and ash 6 to 9 p.c. containing nitrogon & phosphoric anhydride.

Action.—The bark, root-bark and young fruit are astringent, tonic and antiperiodic. The bark is also vermifuge. The fruit is purgative and anthelmintic. Leaves are discutient; leaf juice is anthelmintic. Oil from nuts and leaves is local stimulant, insecticide and antiseptic. The flowers are stimulant tonic and stomachic. The gum from the bark is demulcent tonic, The toddy is refrigerant, nutrient and alterative tonic.

Preparations.—Powders (of the bark, root-bark and young fruits), dose is 1 to 2 drachms. Decoctions (1 in 15) of the bark, root-bark and of the leaves, dose is 2 to 4 ounces as anti-periodic every 2 hours previous to expected attack and 1 to 2 ounces as tonic. Fluid extract or Tincture of the root-bark (1 in 5), dose is 1 to 3 drachms. Infusion of the flowers (1 in 6), dose is 1 to 3 ounces. Mucilage of the gum, dose is 1 to 3 ounces. Poultice of the leaves; cataplasma with rice flour or linseed meal added; oil of the kernel of the nuts or seeds; and that of the bruised leaves boiled with cocoanut oil till the juice is wholly absorbed in the oil; for external use only.

Uses.—This tree when planted is believed to be advantageous to health and as a prophylactic against malaria. The bitter tonic, astringent and antiperiodic virtues of its bark have been confirmed even by European practitioners and writers; not only the old writers like

Bartholemo, Sonnerrat etc., but also later investigators and doctors as White, Cornish, Windown, Forbes, etc., have tested and found it as effective in the treatment of intermittent fever as cinchona and arsenic. It has been further tried and tested recently in malarial fevers by Drs. Bhola Nath, Chitale, Parry, Mandal, Woolley and Rai Bahadur Ghosh, all of whom have found the drug to possess decided anti-malarial properties—(Calcutta Report on Indigenous Drugs). The *bark* is used in the form of *powder* or *fluid extract* or *decoction* in cases of intermittent and other paroxysmal fevers), general debility, convalescence after fevers, and loss of appetite ; with the addition of a little coriander and ginger powder or bruised cloves or cinnamon powder, it is said to be superior to quinine. The bark is used to relieve thirst vomiting and nausea in fever ; also used in skin diseases in the form of powder or docoction. A *decoction of the bark* with the addition of a little black pepper and chiretta is a popular remedy used in fevers. A *decoction* made of 1 drachm of the bark and 2 drachms of long pepper is used in rheumatism, lumbago etc. A decoction made of this bark and Babula bark in equal parts is useful in leucorrhoea. A *tincture* of the bark and a decoction of the root-bark were tried in malarial fevers and found useful—(Report on Indigenous Drugs, Madras.) The *oil* may be used like carbolic oil as a dressing for foul ulcers, as a *liniment* to rheumatic affections and to the head in headache. It is a favourite application in tetanus; and also in leprosy, urticaria, eczema, erysipelas, scrofula and skin diseases, like ringworm, scabies etc., and in mange in dogs, it should be rubbed well for 10 minutes or more

at a time. Sodium and Potassium margosates derived from the margosic acid of the oil are valuable for disinfecting many forms of skin affections. For leprosy it may either be used alone or combined with chaulmoogra oil or gurjun balsam. Injections of margosates and the local application of the acid are found to be more valuable in leprosy and syphilis than the oil. As insecticide it is applied for the destruction of lice and as an alterative and antiperiodic in 5 to 10 minim doses it is given once or twice daily, in chronic malaria, syphilis, leprosy etc., requiring alterative remedies. As anthelmintic it is given in doses of ½ to 1 drachm. A compound medicated oil consisting of 40 parts of *neem* oil, 1 part each of *haritala*, *manasila*, *bhilama*, cardamoms, aloe-root, sandalwood, *Tagara* (root of Valeriana hardwickii) and *Chameli* and 100 parts of water, all boiled together and made into oil in the usual way; used as an application to suppurating scrofulous glands. The *fruit* is useful in leprosy, intestinal worms, piles and urinary diseases. *Kernel* of the fruit 1 drachm mixed with 2 drachms of *gool* and made into a pill, is given daily for 7 consecutive days to cure piles. The *seeds* are used for killing pediculi and the *powdered kernel* for washing the hair. The *dry seeds* possess the same properties as the oil when bruised and mixed with water or some other fluid and applied to itch etc. The *leaves* heated over boiling water or in the form of pulp or paste or poultice or ground with honey into a *Lep* form antiseptic applications to unhealthy pustules, indolent glandular swellings, boils and ulcers. In hot decoction or infusion with the addition of *Katuki* and chiretta, they are invaluable in febrile cases, and

externally the decoction is a valuable antiseptic and healing lotion like a weak solution of carbolic acid, and an anodyne fomentation to unhealthy ulcers, swollen glands, bruises and sprains. The *leaves* eaten daily act as prophylactic to snake-poison. They are used to diagnose cases of snake poisoning; they do not taste bitter to those who are poisoned, if given for eating. A *pill* made of :—the leaves 1 tola in weight, camphor and asafoetida 2 grains each, given mixed with 3 drachms of jaggery at bedtime is said to act as prophylactic against epidemics. Cakes made of 21 leaves with cow's ghee and *moong-dal* are eaten for 21 days with cow's ghee during which period common salt is prohibited and *saindhava* is used instead in small quantities. The *leaf-juice* is given in worms, jaundice and in skin diseases. With sweet oil it is given in intestinal worms; with honey in jaundice; with chebulic myrobalan in chronic skin diseases like prurigo, boils, eczema, urticaria etc. The leaves are said to prevent the ravages of white ants. A *paste* of the leaves is used externally in cases of small-pox. Leaves are spread on the bed ot the small pox patient and fans made of them are used for fanning him. *Pills* of 5 grains, made of the fresh tender young leaves with liquorice powder and a few drops of water given thrice daily were found marvellously successful in small-pox cases.—(Dr. Pulney Andy). A *poultice* of the leaves mixed with sesamum seeds is very useful in unhealthy ulcerations.—(Chakradatta). A *decoction* of the leaves also is administered with great benefit in intermittent fevers complicated with congestion of the liver. The *gum* is useful in catarrhal and other affect-

ions. The *flowers in infusion* are given in atonic dyspepsia and general debility. The infusion has a marked action on the liver turning stools into brilliant yellow after its use. The *toddy* or the *fermented sap* of the tree is said to be valuable in consumption, atonic dyspepsia, general debility, chronic leprosy and other skin diseases. The *tender twigs* of the tree are used as tooth-brushes, which are believed to keep the system healthy and the breath and mouth clean and sweet. Under the name of *Pancha-nimba gutica* a medicine is prepared which contains the flowers, fruit, leaves, bark and root of the tree 15 parts each to 1 part each of *Loha-bhasma* (powdered iron oxide), *Balharda* (Chebulic myrobalans), seeds of Cassia Tora, *Triphala*, fruit of Semecarpus anacardium, *Vavadinga* (Embelia ribes), sugar, emblic seed, Curcuma longa, long pepper, black pepper, dry ginger, *Bavanchi* (seeds of Psoralia corylifolia) *garamalo* (pods of Cassia fistula) and *gokhru* (Tribulus terestris) all powdered, mixed together and made into a paste in the juice of *Bhringraj* (Eclipta erecta) and then mixed with the decoction (1 in 8) of the bark of Acacia catechu. This is given in doses of 4 drachms in leprosy and white patches. Another preparation called *Pancha tikta ghrita* which is made by boiling together 80 tolas each of *Neem* bark, leaves of Momordica dioica, Solanum jacquinii, *Gulancha* and bark of Adhatoda vasika, in 64 seers of water till it is reduced to quarter, and strained and then adding four seers of clarified butter and a seer of the three myrobalans in the form of a paste and the whole prepared into a *ghrita* in the usual way, is recommended to be given in doses of three to six drachms in chronic skin diseases—(Chakradatta).

585. MELIA AZEDARACH; M. Sempervirens.

(*N. O.*—MELIACEAE.)

Sans.—Mahanimba; Himadruma; Parvatanimba vraksha. *Eng.*—The Persian Lilac; Common Bead tree. *Fr.*—Azedarak commun; Cyrovenne. *Ger.*—Gemeiner Zedrrach. *Punj.*—Drek. *Hind.*—Bakayan. *Ben.*—Ghora-nim. *Mah.* & *Bom.*—Vilayati-nim. *Tel.*—Konda-vepa; Turukavepa. *Tam.*—Malaivembu. Malay.—Mullayvempu. *Arab.*—Hab-ul-ban. *Pers.*—Tak. *Can.*—Turaka-bevu; Huchha bevu; Chikka bevu; Bettada-bevu. *Kon.*—Phirangi-nimb.

Habitat.—This tree is found wild in Persia and the Western Himalaya, cultivated in some parts of India.

Parts Used.—Root-bark, fruit or berry, seeds, flowers, leaves, oil and gum.

Constituents.—The active principle is a light yellow non-crystalline, bitter, resinous substance without alkaloidal properties; sugar is present and tannin occurs in the outer portion of the bark. The activity resides in the liber or inner bark.

Action.—The bark is cathartic and emetic; the flowers and leaves are emmenagogue and resolvent. The root-bark is bitter, emetic and anthelmintic; in large doses narcotic. Leaves are anthelmintic, antilithic, diuretic, and emmenagogue; their decoction is astringent and stomachic.

Uses.—The *root-bark* is used in decoction (1 in 10), as an anthelmintic for children in ½ ounce doses every third hour or morning and evening for some days successively then followed by a cathartic. The *leaf juice* may also, as anthelmintic be administered internally. The *flowers* and *leaves* are applied as a *poultice* to relieve

nervous headaches. A *decoction of the leaves* is employed in hysteria. The leaves and bark are used internally and externally in leprosy and scrofula; while a poultice of the flowers is believed to have vermicide properties and valuable in eruptive skin diseases. *Decoction of the root-bark* (1 in 10) is used as a bitter tonic in doses of ½ to 1 ounce. A *syrup* containing vanilla to disguise its disagreeable taste is also prepared from the bark. In large doses the bark, leaves and fruits or berries especially fresh are all poisonous, producing narcotism which is followed by death ; 6 to 8 fresh berries have caused death. But they are used in leprosy and scrofula. The *dried berries* immersed in whisky have been employed against ascarides, tape worm etc., and the *pulp* of the berries stewed in lard is useful in scald head. A *poultice of the flowers* is used to kill lice and to cure eruptions of the scalp. The *seeds* are used in rheumatism. The *oil* is used similarly to that of neem. The *gum* is a remedy for splenic enlargement.

586. **Melia Superba or M. Dubia or M. Robusta** are species of the same genus (*Bom. Ben. Hind.*--Kadu khajur ; Kala khajur) the *fruit* of which is bitter, astringent and carminative. Its *pulp* is given for relief of colic and other bowel complaints ; dose is half fruit. It has a bitter nauseous taste and resembles a date in size and shape ; its colour is black.

587. **Melissa Parviflora** of the genus Labiatae (*Pers.*—Budrunjboya) found in temperate Himalaya from Garhwal to Sikkim and Khassia mountains, and is used in the Punjab as stomachic, also in liver and heart diseases and weakness of sight. The *leaves* are drunk with wine

and applied outwardly against the stings of venomous insects and bites of mad dogs. A *decoction* of the leaves is used as a gargle to relieve toothache. It is said to be good for those who find it difficult to breathe without holding their necks upright.

588. **Memecylon Edule; M. Tinctorium,** belonging to Melastomaceae (*Sans.*—Anjane. *Eng.*—Iron wood-tree. *Bom.*—Lokhandi. *Mah.*—Limba. *Can.*—Limba toli. *Mal.*—Kashoa. *Tel.*—Allichettu. *Tam.*—Kayampuvuchedi; Casery chedi. *Cing.*—Wari-kaha; Serookaya. *Kon.*—Kalo kudo) is found in the eastern and western Peninsula and in Ceylon. It is remarkable for its bright green foliage and clusters of purplish blue flowers growing into roundish and deep purple berries, which are described poetically as "globes of pink and blue and white" like living opals. The *leaves* contain a yellow glucoside besides chlorophyl, resins, coloring-matter, gum, starch, malic acid, crude fibre and inorganic matter containing silica. They are used as cooling and astringent; their *infusion* (1 in 20) is used as a collyrium in conjunctivitis, and given internally in leucorrhoea and gonorrhoea. The *root in decoction* (1 in 10) is considered beneficial in doses of ½ to 1½ ounces in excessive menstrual discharge—(Drury). The *bark* with equal proportions of cocoanut kernel, *ajwan* seeds, yellow zedoary and black pepper, all in powder, and tied up in a cloth forms a nice fomentation or applied as a *Lep* to bruises.—(Dymock.)

Menespermum Fenestratum—See Coscinium Fenestratum.

Menespermum Hirsutam—See Cocculus Villosus,

589. **Menthus Arvensis** of the genus Labiateae is a fragrant herb (*Eng.*—The Marsh Mint. *Hind. Ben. Pers. Bom., Tel., & Tam.*—Pudina. *Arab*—Naanai-hindi. *Mal.*—Puttiyana. *Can.*—Chetni-marugu. *Burm.*—Bhudina) is a native of the temperate Himalaya, cultivated in gardens in Concan. An essential oil is distilled from the leaves, flowering tops and stems, similar to peppermint, and a stearoptin known as menthol or peppermint camphor is also obtained. The *herbs of mint* are much esteemed in India as aromatic, carminative, stimulant, antispasmodic and stomachic. They are used in *chutneys*. A *decoction* or *vapour of its tea* is largely used with lemon-grass as a febrifuge in fevers. It is also given in hiccup. The oil and menthol have the same properties. The latter is an invaluable anti-neuralgic applied externally in alcoholic solution or in the form of the popular "menthol cone."

590. **Mentha Piperata**; M. Incana; M. Hirsuta; M. Canadense; M. Aquatica; M. Sativa are various species belonging to the genus Labiateae (*Eng.*—Peppermint. *Hind.*—Peparaminta; Gamathi phudina (M. Incana); Basarai phudina (M. Sativa), met with in Northern India, Cashmere etc. The leaves contain a volatile oil, menthol, resin, tannin and gum. The volatile oil—Oleum mentha piperitae B. P., obtained by distillation, is a colorless viscid liquid, becoming brown on exposure, of a peculiar pungent camphoraceous odour and hot taste. It contains chiefly a crystalline stearoptin known as menthol or mint camphor and a liquid turpene, also glacial acetic acid and carbon bisulphide; the dose is ½ to 2 minims. It is antiseptic, deodorant, stimulant and carminative; generally

used as an external application in congestive headaches, rheumatism, neuralgia etc. The stearoptin is obtained by cooling the oil. The *leaves* and their volatile *oil* are aromatic, stimulant, carminative and antispasmodic. The *leaves in infusion* (1 in 10) or their *oil*, or as *spirit* in doses of 5 to 20 minims or *aqua* in doses of ½ to 2 ounces are used in cases of vomiting, gastric colic, cholera, diarrhoea, flatulence, etc. It is also given in dysmenorrhoea together with tea in weak digestion, in hiccup and palpitation of the heart. It is given with purgatives as a corrective and preventive of griping. *Locally* the *oil* is a powerful anodyne, anaesthetic, antiseptic and germicide useful in herpes zoster, pruritus, etc., in the form of a lotion. In phthisis it is used as an antiseptic inhalation and as a paint in diphtheria. It relieves toothache caused by caries.

591. **Mentha Sylvestris** & M. Viridis or M. Crispa are species (*Eng.*—Spearmint; Wild mint. *Hind. Ben. Bom.*—Pahadi pudina. *Arab.*—Sudanaj. *Pers.*—Nagbo; Shah sufian; Pudang. *Fr.*—Mente Sauvage) growing in Temperate Himalaya, Cashmere and Persia. The leaves and flowering tops contain a volatile oil (similar in composition to peppermint but differing from it in odour and flavour) resin, gum and tannin. Dose of the oil is from ½ to 3 minims. Infusion of leaves and tops (1 in 10), dose is ½ to 2 ounces; Spirit of the oil (1 in 10), dose is 10 to 30 minims and Aqua made from the oil (1 in 500 of water), dose is ½ to 2 ounces, are the preparations used in medicine for their carminative, stomachic and stimulant properties given in hiccup, bilious vomiting, flatulence, colicky pains, cholera etc. A *chutney* is made

of the leaves which is eaten to remove the bad taste in the mouth in febrile conditions *e. g.*—Leaves of spearmint, dry date, black pepper, rock salt, raisins and cumin in equal parts are rubbed into a *chutney* with lime juice. In colic the *mint juice* with a little black pepper powder and honey is given. The juice mixed with honey relieves pain in the ears; applied to the temples it relieves pain in the head; it is very healing applied to bruises and sores. The *oil* is a local anaesthetic and is used to allay the pain of superficial neuralgias and herpes zoster. It is also a powerful antiseptic. It relieves toothache, when applied to the hollow of the decayed tooth. Its odour is said to keep off mosquitoes. Like volatile oils generally the oils of peppermint and soearmint are said to reduce the number of white corpuscles by diminishing the activity of the intestinal absorbents.

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592. MESUA FERREA; M. Roxburghii; M. Coromandalina.

(*N. O.*—Guttiferae.)

Sans.—Nagkesara; Nagpushpa. *Eng.*—Cobra's saffron. *Fr.*—Mesua Naghas. *Hind. & Tel.*—Nagakesara; Gajapushpam. *Ben.*—Nagesar. *Mah. & Kon.*—Nagchampe. *Tam.*—Veillutta-champakam; Cheru-Nagapu. *Can.*—Nagasampige. *Mal.*—Nagachampakam; Veila. *Burm.*—Kengan; Gungen.

Habitat.—Common on the Eastern Himalaya, East Bengal and Assam, Eastern & Western ghauts, Burma and the Andamans; it is cultivated in gardens.

Parts Used.—The flower-buds, flowers, fruit, seed, root, bark and oil.

Constituents.—The young fruit contains an oleo-resin from which an essential oil is obtained. The seeds contain a fixed oil. The hard pericarp contains tannin. The resin is in tears; it dissolves in benzol. The essential oil is very fragrant, pale yellow and of the odour of flowers.

Preparations.—Syrup (1 in 10), dose is ½ to 1 dr; Decoction of root (1 in 10), dose is 2 to 4 drs; Ointment and Oil.

Action.—The dried blossoms, root and bark are bitter, aromatic, and sudorific; the bark is mildly astringent. Unripe fruits are aromatic, acrid and purgative. The oleo-resin exuding from the bark, root etc., is aromatic and demulcent. The pericarp of the fruit is astringent. The dried flowers are astringent and stomachic; also stimulant and carminative.

Uses.—The *leaves* are used in the form of poultice which is applied to the head in severe colds. The *bark* and *root* in *decoction* or *infusion* or *tincture* is a bitter tonic. A *fixed oil* expressed from the seeds is used as an application for cutaneous affections, such as sores, scabies, wounds etc., and as an embrocation in rheumatism. The *dried flowers* are much used as a fragrant adjunct to decoctions and oils. *Powdered* and mixed with ghee they are given in bleeding piles. They are also useful in thirst, irritability of the stomach, excessive perspiration, cough with much expectoration, dyspepsia, etc. A *syrup* of the flower-buds (1 in 10) is given for the cure of dysentery. A *paste of the flowers* with the addition of butter and sugar is recommended to be taken in bleeding piles. The *powdered flowers* mixed with old clarified butter that has been

washed a hundred times in water are said to be an effectual application in burning of the feet—(Chakradatta). The same is applied with much benefit to bleeding piles.

Meynia Spinosa.—See Vangueria Spinosa.

Michelia Cathcartii is a species allied to M. Champaca found in Sikkim.

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593. MICHELIA CHAMPACA; M. Murantiaca.

(*N.O.*—MAGNOLIACEAE.)

Sans.—Champaka : Kusuma ; Suvarna. *Eng.*—Golden or yellow champa. *Fr.*—Champac. *Ger.*—Wohlriechende Michelie. *Hind & Ben.*—Champa. *Mah.*—Sonchampa. *Punj.*—Chamoti. *Guz.*—Rae Champac ; Pilo Champa. *Nepal.*—Oulia Champ. *Tel.*—Sampagni puvvu. *Tam.*—Shampang. *Can.*—Sampige. *Mal.*—Champakam. *Kon.*—Champe. *Cing.*—Sappu.

Habitat.—A tall evergreen tree growing wild in Nepal, Bengal, Assam and Burma and commonly cultivated for its yellow, sweetly-scented flowers, which are given as an offering to the gods.

Parts Used.—Bark, root, root-bark, leaves, flowers, fruit and oil.

Constituents.—The bark contains a volatile oil fixed oil, resin, tannin, mucilage, starch and sugar.

Action.—Deobstruent, alterative, bitter, stomachic, emmenagogue and demulcent. The leaves are applied to indolent swellings, the bark is bitter, tonic, astringent, antiperiodic and alterative. The root is described as purgative. The flowers are used as stimulant, tonic and carminative ; also as demulcent and diuretic. The root-

bark is emmenagogue and purgative. The leaf-juice is vermifuge. The fruits are edible and their seeds are used to destroy vermin.

Uses.—An *infusion* or *decoction of the flowers* has been recommended in cases of dyspepsia, nausea and fevers in doses of half to two ounces; it is also useful in preventing scalding in gonorrhoea and renal diseases. Of the flowers an otto somewhat resembling that of the *ilang* is prepared. The flowers beaten up with or macerated in sweet oil form excellent application in cephalalgia, ophthalmia and to foetid discharges from the nostrils; also in sub-acute rheumatism and in vertigo and gout. The *oil of the seeds* rubbed over the abdomen relieves flatulence. The *bark in powder* in doses of 10 to 30 grains or as *decoction* in two to three ounce doses is given with much benefit in low intermittent fevers. A *decoction of the bark* (1 in 20) was tried and found very beneficial in ½ to 1 ounce doses in mild cases of chronic gastritis.—(Indigenous Drugs Report, Madras). The bark is said to be an excellent substitute for guaiacum and is used in chronic rheumatism. The *dried root* and *root-bark* mixed with curdled milk makes a useful application to abscesses. The *juice of the leaves* is given with honey to relieve colic. The *young leaves* contused and macerated in water and instilled into the eyes are said to clear the vision. The *leaves* annointed with ghee and sprinkled over with cumin seed powder are placed round the head to relieve puerperal mania, delirium and maniacal excitement.

594. **Michelia Excelsa** is a lofty aromatic tree growing in the Himalayas and possessing the same properties as M. Champaca.

595. **Michelia Kisopa** is also growing in the Himalayas with a gray bark and having the same properties as M. Champaca.

596. **Michelia Nilagirica** (*Eng.*—Hill champa. *Cing.*—Walu Sapu) is the species growing on the higher mountains of the Western Peninsula and Ceylon. It contains a volatile and a fixed oil, acrid resin, tannin, sugar, starch, calcium oxalate etc. The *bark in infusion* and *decoction* is used as febrifuge like that of M. Champaca.

597. **Michelia Rheedi** is a variety of M. Champaca found in Southern India. Its flowers boiled in oil are used in headache and in the affections of the eye.—See M. Champaca for further uses.

Micromeria Capitallata—See Mentha Piperata.

598. **Mimosa Amara** is a Leguminous species (*Sans.*—Krishna sirish. *Guz.*—Moto sarsio. *Mah.*—Lulai; Lali surangi. *Tel.*—Nallarenga; Shekrani. *Can.*—Bilkambi. *Coorg.*—Kadsige. *Mal.*—Dosulay) found in the Western Peninsula. The *seeds* are astringent, given in piles, diarrhoea, gonorrhoea etc. The *oil* extracted from them is said to cure white leprosy. The *flowers* are considered cooling, and applied to boils, eruptions and swellings. The *leaves* are regarded as useful in ophthalmia—(Baden Powel).

Mimosa Arabica—See Acacia Arabica.

Mimosa Catechu (*Fr.*—Cachoutier)—See Acacia Catechu.

599. **Mimosa Cinerea or Dichrostachys Cinerea** *Sans.*—Virvriksha. *Hind.*—Vurtuli. *Merwara.*—Kanrat. *Rajput.*—Kheri. *Mah. & Gond.*—Segumkati. *Tam.*—

Vadatalla. *Tel.*—Veturu) is found in U. P. and Western Peninsula. The young shoots are bruised and applied to the eyes in ophthalmia.

Mimosa Entade—See Entada Scandens.

Mimosa Farnesiana—See Acacia Farnesiana.

600. Mimosa Kalkora or Albizzia Julibrissin *Ben.*—Kalkora. *Punj.*—Sirin. *Hind.*—Lalsiris. *Eng.*—Sirissa tree. *Kon.*—Siras) is found throughout the Himalayas from Hazara to Sikkim. For uses see Mimosa Sirissa.

601. Mimosa Lucida (*Hind.Kon. & Mah*—Kachora) grows in the forests of the Himalayas from the Ganges eastward and in South India. A *decoction of the leaves* is a medicine for leprosy; it is also used as a stimulant to promote the growth of hair—(Atkinson).

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602. MIMOSA PUDICA.

(*N. O.*—Leguminosae.)

Sans.—Lajjālu ; Ajalikalika ; Namaskari. *Eng.*—Sensitive plant ; Humble plant. *Fr.*—Sensitive commune ; Herbepudique ou Vive mimuese. *Ger.*—Shaamhafte Sinnplauze ; Fuhlplanze. *Hind.*—Lajalu. *Ben.*—Lajak. *Bom.*—Lajjâbati. *Tel.*—Munuguda-maramu ; Muttavapulagamu-chettu. *Tam.*—Thottalpadi ; Thottal shurungi. *Can.*—Nâchike-gida. *Mal.*—Thottamvati ; Thendarmani. *Mah. & Kon.*—Làjri.

Habitat.—This sensitive shrub, a native of Brazil has long been naturalized and is plentiful in the hotter regions of India.

Parts Used.—Root and leaves.

Constituents.—The root contains tannin 10 p.c., and and ash 5·5 p. c.

Action.—Resolvent and alterative. The root is aphrodisiac.

Uses.—The *root* in the from of *decoction* (1 in 10) is given in doses of 2 to 6 drs., in gravel and other similar urinary complaints; it is also useful in diseases arising from corrupt blood and bile. *Infusion of leaves* is also used in ½ to 1 ounce doses. The *leaves* and *root* in the *powdered* state are given 2 drachms in milk in cases of piles and fistula. The *juice* is applied externally to fistulous sores. The *leaves* rubbed into a *paste* are applied to hydrocele and glandular swellings. Their *juice* with an equal quantity of horse's urine is made into an *anjan* which is used to remove films of the cornea by setting up an artificial inflammation. The juice of the leaves is used to impregnate cotton wool for dressing in any form of sinus. The leaves are employed as a bath in the pains of the hip and kidneys.

603. Mimosa Rubricaulis or M. Mutabilis (*Punj.*—Ral. *Sans.*—Rala-arlu. *Hind.*—Kingly; Kacheyta. *Sind.*—Hajeru. *Nepal.*—Aradi. *Ben.*—Shinkanta. *Tel.*—Sarjjasasamu; Chandra) is the exudation of the tree called Shorea Robusta of the Western Himalaya, Kumaon. The *leaves* of the tree in *infusion* are prescribed for piles in the U. P.—(Atkinson). The *powdered root* is given for vomiting and the *bruised leaves* are applied to burns.—(Stewart). The smoke arising from burning the gum is said to be disinfectant.

Mimosa Saponaria—See Acacia Concinna.

Mimosa Sirissa—See Acacia Speciosa.

604. Mimosa Suma or Acacia Suma (*Sans.*—Samse. *Ben.*—Saingachh. *Hind.*—Chhikkur. *Mah.*—Sami. *Can.*—Bani. *Uriya.*—Sumi) is a kind of thorny plant found almost everywhere in India. There are two varieties :—large and small. The small is known as *Samur* and is said to have all the virtues of the Sami plant *viz*:—bitter, acrid, astringent, refrigerant and useful in cough, phthisis, leprosy, epistaxis, diarrhoea and piles.

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605. MIMUSOPS ELENGI.

(*N. O.*—SABOTACEAE).

Sans.—Sinhakesara ; Bakula. *Hind.*—Mulsari. *Port.*—Pomme d'Adami. *Fr.*—Mimusope Elengi. *Ger.*—Affengesict. *Ben.*—Bakul. *Mah.*—Ranjanasal. *Tel.*—Pogada, *Tam.*—Vakulam. *Can.*—Ranje ; Pagade-mara. *Mal.*—Mukura. *Kon.*—Vovaliruku. *Burm.*—Khaya. *Guz.*—Bolsari. *C. P.* & *Bom.*—Taindu.

Habitat.—This large ornamental tree is cultivated in gardens for its fragrant flowers. It is found wild in the forests of South India and Burma.

Parts Used.—Bark, flowers, fruit and oil of the seeds.

Constituents.—The bark contains tannin, some caoutchouc, wax, coloring matter, starch and ash. The flowers contain a volatile oil. The seeds contain a fixed oil. The pulp of the fruit contains a large proportion of sugar.

Action.—The flowers, fruit and bark are astringent. The bark is also tonic and febrifuge. The unripe fruit is very astringent. The water distilled from the volatile oil of the fragrant flowers is stimulant.

Uses.--The *fruit* and *flowers* together with other astringents are used to prepare a *lotion* for wounds and ulcers. The *powder of dried flowers* produce copious discharge from the nose; it is sniffed to relieve headache. The *seeds bruised* into a *paste* and mixed with oil or ghee are made to form *suppositories* in cases of obstinate constipation, especially in children. The *unripe fruit* is a useful masticatory and therefore recommended to be chewed for fixing loose teeth. The *bark in infusion* or *decoction* is similarly useful as gargle in salivation in diseases of the gums and teeth; also used in discharges from the mucous membranes of the bladder and urethra. It is useful in fevers and as a general tonic. The following *compound powder* made of the bark is recommended to be used as tooth-powder in cases of spongy gums :—Take of the bark of Mimusops Elengi, and Pistacia Lentiscus each 1 tola, *Sung Jirahat* 5 tolas, Pelitory root and *Murmukhi* each 6 *mashas*, small cardamoms and *Anar-kikali* (pods of Punica granatum) each 3 *mashas* and white catechu 1 tola, powder and mix together, and use.—(Aksir-ul-Imraz). The bark is said to increase fertility in women. The *pulp of the ripe fruit* is edible; it is applied to relieve headache. The ripe fruit is said to promote delivery.

606. **Mimusops Hexandra or M. Indica** (*Sans.*—Rajadani. *Hind.*—Kshiri. *Ben.*—Khir-khejur. *Mah. & Guz.*—Ranjana. *Tam. & Tel.*—Palla) is found in Deccan and North India. The bark of this tree is found to contain tannin, resin, wax, starch, coloring matter and mineral matters. The seeds contain a fixed oil. The fruits contain sugar, caoutchouc, pectin, tannin and

coloring matter. A *decoction of the bark* (1 in 10) is astringent and used in $\frac{1}{3}$ to 1 ounce doses for the same diseases as that of *Bakula* (M. Elengi). The *oil* from the seeds is demulcent and emollient. The *fruit* is deliciously sweet and restorative. The *milky juice* made into a *paste* with the leaves of Cassia fistula and seeds of Calophyllum Inophyllum is applied to boils.

607. **Mirabilis Jalappa,** a small shrub of the genus Nyctaginaceæ (*Sans.*—Sandhya-raga ; Krishnakali. *Eng* —Four-o'cloth flower. *Tel.*—Chandra-Kantha. *Tam.*—Patharashu. *Can.*—Madhyanha mallige. *Pers.*—Gul-i-abbasa. *Mal.*—Anthimalari. *Kon.*—Akasamugri) is generally found cultivated in gardens for the sake of its beautiful flowers of variegated colours. The roots contain a small quantity of an alkaloid not yet isolated. The dried root is nutrient. The *tuber* is said to possess purgative properties similar to Jalap. The tuber is used as a *poultice* on carbuncles. The root is a mild purgative. Powdered and fried in ghee with spices it is given in milk as a *paushtik* (nourishing or strengthening medicine). Rubbed with water it is applied as *lep* in contusions. The *leaves* bruised and heated are applied as a stimulating *poultice* to boils, buboes and other abscesses to hasten the suppurative process. The fresh *leaf-juice* is very soothing and allays the heat and itching when applied to the body in urticaria. It also cures wounds and bruises. The seeds are used to adulterate black pepper.

Modera Canni—See Hugonia Mystax.

Mogorium Sambac—See Jasminium Sambac.

608. **Mollugo Cerviana; M. Stricta; M. Triphylla** are the species of Caryophyllaceæ (*Sans.*—Phanya;

Grishmasundara; Parpataka. *Hind.*—Taph-Jhad. *Ben.*—Jalpapra; Ghimashak. *Bom.*—Kharas. *Tel. Tam. Mal. Can.* & *Kon.*—Parpataka) found in all parts of India. The plant contains a bitter principle, bitter resin, gum and ash 68 p. c, containing alkaline nitrates. In action it is stomachic, aperient, uterine stimulant and antiseptic. An *infusion of the plant* is given to promote lochial discharge. The roots have an aromatic smell; the *oil* in which the roots are boiled is used as application in gouty and rheumatic complaints The *flowers* and *tender shoots*, in *infusion* or *decoction*, have a diaphoretic effect and are useful in fevers.

609. Mollugo Pentaphylla (*Bom.*—Zaharasa) is a small spreading plant, the leaves of which are bitter, stomachic and aperient. They are given in infusion to promote digestion; also to promote menses and suppressed lochia. The *leaves* warmed and besmeared with oil are applied over the ear to relieve earache.

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610. MOMORDICA CHARANTIA; M. Muricata; M. Balsamina.

(*N. O.*—CUCURBITACEAE.)

(*Sans.*—Karavella. *Eng.*—Bitter gourd. *Fr.*—Momordique charantia. *Ger.*—Gurkenahnlicher Balsamapfel. *Hind.*—Kareli. *Guz.* & *Mah.*—Karate; Karli. *Ben.*—Uchchhe; Kerula. *Tel.*—Kakara. *Tam.*—Pavakka. *Can.*—Hagalakayi. *Mal.*—Paval; Kaipavalli. *Kon.*—Karathi. *Arab.*—Quisaul-barri.

Habitat.—This climbing plant is cultivated in gardens everywhere in India for its fruit.

Parts Used.—Fruits, seeds and leaves.

Constituents.—A bitter glucoside soluble in water, insoluble in ether; a yellow acid, resin, & ash 6 p. c.

Action.—The fruit is tonic, stomachic, stimulant, antibilious, laxative and alterative. The fruit-pulp, leaf-juice and seeds are anthelmintic (in lumbrici). Leaves act as galactagogue. The root is astringent.

Uses.—The *fruit* is wholesome and therefore eaten as a vegetable. There are two varieties, one with a small roundish or ovoid fruit (*uchchhe*) and the other longer and more cucumber-like (*Kerula* in Bengali). The *fruit* is useful in gout, rheumatism and diseases of the spleen and liver. It is supposed to purify the blood and dissipate melancholia and gross humours. The *juice of the fresh leaves* is given to children as a mild purgative, but is not unattended with danger. Leaf-juice $\frac{1}{8}$ seer is given in bilious affections as emetic and purgative alone or combined with aromatics. The antidote is ghee and rice. The *fruit* and *leaves* are both administered internally in leprosy, piles, jaundice, etc. The leaves act as galactagogue. The *leaf-juice* in which black pepper is ground is applied round the orbit as a cure for night-blindness. The leaf-juice is rubbed to soles in the burning of the feet. Leaf-juice $\frac{1}{2}$ tola with a little turmuric powder added is given for the nausea of children, as it acts as emetic and thus cleanses the stomach. In the liver complaints of children a mixture of the juice of *Karvella* leaves, that of leaves of Adansonia digitata, that of ripe betel leaves, and that of the fresh bark of Eugenia Jambolana, in which *Vacha* (Sweet-flag root) is rubbed is given for 7 days. The *root* is applied externally as *paste* to piles. The *whole plant* mixed with cinnamon, long-

pepper, rice and *marothy* oil (chaulmugra oil) forms a good ointment in psora, scabies, malignant ulcers and other skin affections. A spoonful of *expressed juice of the fruit* together with chalk or with sugar is used in aphthae; it is also useful as an emmenagogue in dysmenorrhoea. Externally it is applied to the scalp in pustular eruptions, to burns, boils, etc. The whole *plant powdered* is used for dusting over leprous and other intractable ulcers.

Momordica Cumbalaria—See Luffa Tuberosa.

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611. MOMORDICA DIOICA.

(*N. O.*—CUCURBITACEAE.)

Sans.—Vahassa. *Hind.*—Dhar-karela. *Punj.*—Kirara. *Guz.* & *Mah.*—Kantolan. *Bom.*—Kartoli. *Ben.*—Kankrol.—*Tel.*—Karkotaki. *Tam.*—Aegarvalli, Pallephagil. *Can.*—Madahagala-kayi, Karchi-balli. *Mal.*—Vempaval Erimapase. *Kon.*—Phagil.

Habitat.—This climbing creeper is generally met with in Bengal and in the forests of Southern India.

Parts Used.—The fruit and tuberous root.

Constituents.—An alkaloid, a fragrant extractive matter and ash 3 to 4 p.c. The ash contains a trace of manganese.

Action.—Stimulant and astringent.

Uses.—The fruits are generally used as vegetable; they are very wholesome and grateful when cooked and eaten with food. The *juice of the fruit* is a domestic remedy for the inflammation caused by contact with the urine of the house lizard. The *powder* or *infusion* of the dried fruits when introduced into the nostrils produces a powerful errhine effect and provokes a copious discharge

from the mucous membrane. The *root of the male creeper* is applied in the form of *paste* to ulcers caused by snake-bites. The mucilaginous *tubers* (especially those of the female plant, which are larger than those of the male) are used in the form of *electuary* in doses of 1 to 2 drs., in cases of bleeding piles and similar bowel affections. It also acts as an expectorant. Dose is two drachms or more twice daily. The *plant* or the *juice of the leaves*, mixed with cocoanut, pepper, red sandalwood etc., to form an *ointment*, and applied to the head is said to relieve headache. *Powder of the root* applied to the skin renders it soft and supple and lessens perspiration.

612. **Momordica Mixta** (*Ben.*--Golkakra) is a species found in Bengal with red prickly fruits, the yellow insipid pulp of which is used as a vegetable food.

Momordica Monodelpha.--See Cephalandra Indica.

Momordica Umbellata.--See Zehnerea Umbellata.

Monita Barberioides.--See Azima Tetracantha.

613. **Morinda Citrifolia** or M. Tinctoria or M. Bracteata of the genus Rubiaceae, (*Sans.*—Achuka. *Eng.*—Indian Mulberry. *Hind.*—Al; Achhi. *Ben.*—Ach. *Bom.*—Aal. *Mah.*—Baratindiala. *Tel.*—Maddi-chettu. *Tam.*—Nuna; Tunavu. *Can.*—Haladi-pavate; Tagate-mara. *Mal.*—Kadappilavu. *Kon.*—Makad-phal) is a bush found wild and cultivated nearly all over India. The root and root-bark yield a red dye "morindin" a crystalline principle. It is used for colouring the *Kharui* cloth used for covering account books in India, as it is not attacked by white ants. The *root* is used as a cathartic. The *fruit* and *leaves* in decoction are administered as deobstruent and emmenagogue;

also as tonic and febrifuge. The *charred leaves* made into a *decoction* with a little mustard are said to be a remedy for infantile diarrhoea; with aromatics the decoction is given in dysentery. The leaves applied to wounds and ulcers have a healing effect. The *expressed juice* of leaves is applied to relieve pain in gout. The *unripe berries* charred and mixed with salt are applied successfully to spongy gums. The *juice* of mulberry made into a *syrup* and used as a gargle relieves sore-throat. The *juice* contains malic and citric acid, glucose, pectin and gum. The *ripe fruit* is a mild laxative. It contains a large quantity of sugar.

614. **Morinda Umbellata or M. Scandens** is a species found on the hills of East Bengal, Western Peninsula, South Concan, Niligiris and Travancore (*Tam.*-Noona maram, *Tel.*—Moolughoodu. *Bom.*—Aal. *Can.*—Maddi chekhi) the *leaves* of which in conjunction with certain aromatics are used in *decoction* in cases of diarrhoea and dysentery in doses of half a teacupful twice daily.

615. **Moringa Concanensis** is the red flowered species of Moringeae genus (*Sind.*—Mooah. *Rajput.*—Sainjnah) met with in Rajputana and Sindh. Its *root* like those of M. Pterygosperma have a pungent flavor and are said to be used as a substitute for horse-radish—(Murray).

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616. MORINGA PTERYGOSPERMA or Guilandina Moringa or Hyperanthera Moringa.

(*N. O.*—Moringeae.)

Sans.—Shobhanjana; Dvishigru ; Murungi. *Eng.*—Horse-radish; Drum-stick plant. *Fr.*—Moringa a grainestripteres.

Hind.—Sahinjan ; Segve. *Duk.*—Munge ka jhad. *Punj.*—Sohanjna. *Ben.*—Sajna. *Tel.*—Munaga. *Guz.*—Saragava. *Mah.*—Shegat ; Murungamul ; Munagacha jhad. *Tam.*—Murungai. *Can.*—Nugge. *Mal.*—Murina. *Kon.*—Mashinga jhad. *Tel.*—Munaga. *Cing.*—Murunga. *Burm.*—Dandalonbin. *Malay.*—Kaylor ; Ramoongie.

Habitat.—A beautiful tree wild in the sub-Himalayan range and commonly cultivated in India and Burma.

Parts Used.—The bark, root, fruit, flowers, leaves, seeds and gum.

Constituents.—The bark contains a white crystalline alkaloid (occuring in the spirituous extract), 2 resins (one soluble and the other insoluble in ammonia), an inorganic acid, mucilage and ash 8 p. c. The root yields an essential oil very pungent and offensive in odour. The husked seeds yield a fixed oil 36 p. c. known as *Beni* oil. It contains 60 p. c. of liquid oil and 40 p. c. of white solid fat.

Action.—Antispasmodic, stimulant, expectorant and diuretic. The fresh root is acrid and vesicant; internally stimulant, diuretic and antilithic. The gum is bland and mucilaginous. The seeds are stimulant. The bark is emmenagogue and even abortifacient. The flowers are stimulant, tonic and diuretic & useful to increase the flow of bile.

Uses.—Its leaves, flowers and immature capsules are eaten in curries. Grated horse-radish (European) eaten at frequent intervals during the day and also at meals is said to banish the distressing cough that lingers after influenza. It contains sulphur and is therefore recommended for rheumatism ; applied as a poultice for

neuralgia of the face. The *root* of the drumstick tree resembles in odour and appearance that of horse-radish of Europe, for which it is said to be a perfect substitute. A *compound spirit* made in the usual way of equal parts of Moringa root and orange peel with a little nutmeg bruised is a nice carminative and strong stimulant useful in fainting fits. The *root* is applied externally as *plaster* or *poultice* to inflammatory swellings. The *oil of the seeds* with or without the addition of ground-nut oil in equal parts is used as an application to relieve the pain of gout and acute rheumatism. A *paste* made of equal parts of the seeds, rock salt, mustard seeds and *patchak* root, with goat's urine and dried is used as a *snuff* for rousing comatose or drowsy patients—(Bhavaprakash); or the same made in cow's urine is used as a stimulant application to the neck and calves for the same purpose. A *paste* made of equal parts of mustard, seeds of horse-raddish, hemp seeds and barley mixed with sour butter-milk is a useful application to scrofulous glands of the neck. The *gum* is mixed with sesamum oil and is dropped into the ears in otalgia. The gum rubbed with milk and made into a *paste* is applied to the temples in headache. It is also applied to buboes and to the painful bones in syphilis. The *gum* may be used as a *tent* or pessary to dilate the Os uteri as it is very tough and swells rapidly when moistened. It is said to produce abortion. Internally a *decoction* or *infusion* of the root (1 in 20) with the addition of mustard seed bruised is useful in doses of 1 to 2 ounces in ascites due to diseases of the liver and spleen. It may also be used in 2 ounce doses as a vehicle for the administration of nitre 10 grs., per dose for dropsy, gout and calculi. In hoarseness and relaxed sore-throat, a *decoction of the root*

(or the above infusion) has been found serviceable as a gargle. The *juice* of the root with milk is also useful like the decoction in hiccup, asthma, gout, lumbago, rheumatism, enlarged spleen or liver, internal and deep-seated inflammations and calculous affections. The *fresh root* in doses of 20 grains is given in intermittent fevers, in paralytic affections, in epilepsy and hysteria, and as a valuable rubefacient externally in palsy, chronic rheumatism, and also in bites of rabid animals. The *essential oil* obtained from the root is more pungent and offensive than mustard or garlic and is used externally as a rubefacient. Mustard poultices act more speedily or energetically when the expressed juice of the fresh or scraped root is added to them. In cases of difficult or delayed labour, *expressed juice of the fresh root* is applied to the parts under the belief that it expedites delivery. The decoction of the root-bark is also recommended and used for the same diseases as those for which the juice or the decoction of the root is useful. The *expressed juice of the root-bark* also is given in those cases with the addition of honey or rock-salt. Externally the *root-bark* in *decoction* is used to foment the inflamed parts and to relieve spasms or as *plaster* it is applied to the part. A decoction of the root-bark of this tree and the leaves of Rumex Vesicarius is given with the addition of long pepper, black pepper and rock salt in powder, in cases of ascites and enlarged spleen. In enlarged spleen and liver, a decoction of the root-bark with the addition of plumbago root, rock salt and long pepper or of the ashes of Butea frondosa or of *Yavakshara* is recommended—(Chakradatta). In Bengal half-ounce doses of the bark are said to be used to procure

abortion. The fresh juice of the root-bark like the gum is poured into the ears to relieve otalgia, and also into the hollow of the tooth in cases of dental caries. The *pods* act as a preventive against intestinal worms. The seeds of the pods ground with water and instilled into the nostrils are said to cure headaches due to cold and excess of *Kafa*. The *leaves* ground into a *paste* with a few pods of garlic, a bit of turmeric, salt and pepper are given internally in cases of dog-bite and applied externally over the bite. In 5 or 6 days the wound is said to heal, the inflammation and the febrile symptoms subsiding. The *leaf-juice* is dropped into eyes in fainting fits due to nervous debility, spasmodic affections of the bowels, hysteria, flatulence etc; mixed with honey it is applied as *anjan* to the eyelids in eye diseases. A quarter seer of leaf-juice mixed with one tola of *Saindhava* is given in excessive urinary secretion. In cases of headache the juice of leaves with black pepper rubbed into it is applied warm to the aching parts. The leaf juice in doses of 4 tolas is given as an emetic. A *poultice of the leaves* is useful in reducing glandular swellings. It always produces a blister. The *flowers* soaked in vinegar are used with food or they are made into curries which are very wholesome.

617. Morus Alba or M. Indica; M. Parviflora belonging to Urticaceae (*Sans.*—Toola, Tooda. *Eng.*-White Mulberry. *Hind. Pers. & Ben.*—Tut. *Duk. & Guz.*—Tutri. *Bom.*—Tula ambor. *Tam.*—Kambilipuch. *Can.*—Hippal verali) is found wild on the temperate Himalaya and cultivated in Kashmir, the Punjab, Bengal and Burma. The *fruit* is acidulous and pleasant to eat when fresh. It contains sugar, pectin, citrates, malates etc. It is made

into a preserve or *syrup* (1 in 3) which is a useful refrigerant in fevers and as an expectorant in coughs and sorethroat in doses of 1 to 2 drachms; used also as a gargle to relieve sorethroat; it is also slightly laxative. A drink made of its *juice* is cooling and refreshing in doses of 2 to 6 drachms, and a cure for dry throat and thirst. The *leaves* are chiefly used as food for the silkworm. They are also eaten by cattle. Medicinally a *paste* made of the leaves of this plant and the leaves of Margosa (*Neem*) 2 tolas each and white onion one tola, is recommended for external use in bed sores.—(Mufid-ul-Ajsam).

618. **Morus Nigra** (*Hind.*—Shetuta. *Guz. & Bom.*—Shetura. *Arab. & Pers.*—Tuta) is another species, the fruits of which are of a dark purple colour. They are used just like those of M. Alba.

619. **Mucuna Gigentia** or Carpopogon Gigenteum (*Mal.*—Kakuvalli) is a Leguminous species found on the Malabar coast, Ceylon etc. Its *bark in powder* mixed with dry ginger is used for rubbing over painful rheumatic joints.

620. **Mucuna Monosperma** or Carpopogon Monospermum (*Eng.*—Negro Bean. *Bom.*—Mothikuhile; Sougaravi. *Tel.*—Peddaenuga; Doola goonda. *Kon.*—Vodle khatkutli) is found on the East Himalaya, Khassia, Assam, Chittagong and the hills of the West Coast. The *seed* is used as an expectorant in cough and asthma, and externally it is applied as a sedative.—(Peters).

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621. MUCUNA PRURIENS; M. Prurita or Carpopogon Pruriens or Dolichos Pruriens.

(*N. O.*—LEGUMINOSAE.)

Sans.—Atmagupta ; Vanari ; Kapikachchhu. *Eng.*—The Cowhage or Cowitch Plant. *Hind.*—Kavach. *Ben.*—Alkushi. *Guz.*—Kivanch. *Duk.*—Kanch Koorie. *Bom.& Mah.*—Kuhili. *Tel.*—Pilliadagu. *Tam.*—Poonaikkali. *Can.*–Naasuganni ; Nayisonagu-balli. *Mal.*—Nayikuruma ; Chorivalli. *Kon.*—Khavalyavali ; Majram ; Khatkutli ; Khajarkulli. *Pers.*—Hub-ul-kulai.

Habitat.—An annual climbing shrub common in the tropics and found cultivated in some parts for the sake of its golden-brown velvety legumes, which are cooked and eaten as a vegetable.

Parts Used.—The seeds, root and legumes.

Constituents.—Resin, tannin and fat and a trace of manganese. The seeds are found to contain a free fatty acid and its glyceride probably oleic acid, an acid-resin and albumen.

Action.—The seeds are astringent, nervine tonic and aphrodisiac. The root also is a nerve tonic and diuretic. The hairs covering the seed-pods are vermifuge; locally stimulant and mild vesicant.

Preparations.—Powder and Confection (1 in 2) of the hairs of the pods; dose of the Confection is 1 to 3 drachms, and that of the powder is 1 to 3 grains. A decoction and infusion of the root. A compound powder, Pill, & Electuary of the seeds.

Uses.—The *pods* are covered with stiff hairs which produce an intense irritation of the skin if incautiously

handled. A *vinous infusion* of the pods is said to be a certain remedy for dropsy. The *hairs* covering the seed pods mixed with honey have been used as a vermifuge in round worms which are expelled, the action being purely mechanical. The *seeds* are prescribed in the form of *powder* in doses of 20 to 40 grains in leucorrhoea, spermatorrhoea etc., and in cases requiring an aphrodisiac action. A *compound powder* made of these seeds, and of the fruits of Tribulus terrestris taken in equal parts is recommended to be administered in doses of 1 drachm with sugar aud tepid milk, as an aphrodisiac. —(Susruta). Another preparation known as *Vanari Vatika* (Boluses) is recommended in Bhavaprakash.—It is made by boiling 32 tolas of the seeds in 4 seers of cow's milk till the milk becomes thick; the seeds are then decorticated and pounded, then fried in ghee and made into a confection with double their weight of sugar. The mass is then divided into balls which are kept steeped in honey. The dose is about a tola. This is said to be the best of aphrodisiacs. This is said to be useful also in leucorrhoea, profuge menstruation and in paralysis. In the Concan a *Paustik* for spermatorrhoea is made by powdering the seeds of M. pruriens, and *Gokshura,* the roots of Eriodendron anafractuosum and Asparagus adscendens, Embelic myrobalans, *Gulancha* starch, and sugar-candy in equal parts. Of this powder, 6 *mashas* (1½ drachms) with two tolas of ghee are given in cow's milk twice a day. For the expulsion of round worms, an *electuary* made of the pods is the best form for administration :—the pods are first dipped in treacle, syrup or honey and then scraped until the

mass has the consistence of an electuary; of this the dose is about a tablespoonful for an adult and a teaspoonful for a child for 3 or 4 successive mornings. This should be followed by a brisk purgative. The following are some useful prescriptions:—(1) Take of Cowhage seeds 3, Tribulus terrestris 5, Poppy capsules 4, Hygrophila spinosa 3, Bombax malabaricum 3, Ochrocarpus longifolius 2, Curculigo orchioides & Asparagus adscendens (*Kali & Safed Musali*) 2, and sugar 2 parts. Mix and make a powder. Dose.—15 grains in milk for seminal weakness. (2) Take of Cowhage, Mace, Camphor, Argyreia speciosa, Acorus calamus and sugar, all in equal parts. Mix and make a powder. Dose.—10 grs; useful in general debility. (3) Take of Cowhage, Plumbago zeylanica white, Dry ginger, Long pepper, root of Long pepper, Mastiche, Cinnamomum cassia, and Cloves. Mix and make a pill mass. Used in colic, dyspepsia, worms etc. The *root* is considered useful in diseases of the nervous system, such as facial paralysis, hemiplegia, etc. A strong *infusion of the root* sweetened with honey is given in cholera morbus. The root is also useful for delirium in fevers, and when powdered and made into a *paste* it is applied in dropsy, a piece of the root being also applied to the wrist and ankle. The root is also made into an *ointment* which is used for elephantiasis. The *seed* is said to absorb scorpion poison when applied to the part stung.

622. Mukia Scabrilla or Bryonia Scabrilla (*San.*—Musimusikkayi. *Tel.*—Pottibudamu. *Mal.*—Mukkalpiram) is a species of Cucurbitaceae. This drug is an ingredient of some compound preparations prescribed

for chronic diseases with cough as a predominant symptom probably on account of its expectorant properties.

623. **Muricia Cochin Chinensis** of the genus Cucurbitaceae (*Sans.*—Karkataka. *Hind.*—Kakrol. *Ben.*—Golkakra) is met with in Bengal, Deccan and Canara. The *seeds* deprived of the husks contain a greenish oil 43.7 p. c., and a bitter glucoside. The *oil* possesses very powerful siccative properties. The *seeds* deprived of their shells are fried and eaten either alone or with other food. They are considered good for cough and pains in the chest. *Powdered* they form an ingredient of the hot stuff known as *Jhal* in Bengal which mixed wlth melted butter is given to women immediately after parturition and daily for a few days afterwards. The *seeds* and *leaves* are considered aperient and useful in hepatic and splenic obstructions and externally in unhealthy ulcerations, lumbago, procidentia uteri-et-ani, fractures and luxation of the bones. A *plaster* made of the roots is said to promote the growth of the hair and prevent its falling off.

624. **Murraya Exotica or Chesia Paniculata** (*Sans.*—Ekangi. *Eng.*—Honey bush; Cosmetic box; China box. *Ben.*—Kamini. *Hind.*—Bibzar koonti. *Mah.*—Utkara; Kounti. *Tel.*—Naga golanga. *Kon.*—Pandhri. *Burm.*—Thanetkha; May-kay) is a species found on the Himalayas, Bengal and Ceylon. The flowers contain a glucoside named "Murrayin". *Infusion* (1 in 10) of the flowers and leaves is given in doses of ½ to 1 ounce. It is tonic and stomachic like Murraya Koenigii. It is said to be aromatic, refrigerant, digestive and bene-

ficial in rheumatic fever, cough, giddiness, hysteria, thirst and burning of the skin—(Kaviraj N. N. Sen Gupta).

Murraya Koenigii.—See Bergaria Koenigii.

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625. MUSA SAPIENTUM or M. Paradisiaca.

(*N.O.*—Scitamineae.)

Sans—Vana Laxmi; Kadali; Rambha; (unripe) Mochaka. *Eng.*—The Plantain or Banana tree. *Fr.*—Bananier; Plantanier. *Ger.*—Gemeiner Pisang. *Mah.* & *Guz.*—Kela. *Duk.*—Maoz. *Ben.*—Kala. *Tel.*—Kadalamu; Arati. *Tam.*—Kadali; Valei. *Can.*—Bale. *Mal.*—Vala. *Kon.*—Keli. *Cing*—Kehalgaha. *Burm.*—Napiya-bin. *Java.*—Godang. *Pers.*—Mong.

Habitat.--This plant is cultivated universally in many varieties throughout India for its nutritious and delicious fruit.

Parts Used.—The fruit, leaves and stems.

Constituents.--The plant contains about 37 p. c. of dry matter. The growing parts of the plant contain much tannic and gallic acids. The sound ripe fruit contains 22 p. c. of sugar, 16 p. c., being crystallizable. After it has become quite ripe there is a proportionate diminution in crystallizable sugar and increase in inverted sugar. An over-ripe fruit contained only 2.8 p. c., of crystallizable and 11.84 p. c., of uncrystallizable sugar being a total of 14.64 p. c., or $\frac{2}{3}$ of the original quantity. Besides sugar it contains starch, albuminoids 4.8 p. c., fats up to 1 p. c., non-nitrogenous extractives 6 to 13 p. c. and ash containing phosphoric anhydride, lime, alkalies, iron, chlorine etc. "There are large quantities of C. Vitamins and a certain amount of B. Vitamins in it. But there is a

conflict of evidence over the existence of A. vitamins. It is said that the banana contains vitamins capable of preventing and curing diseases due to A. vitamin deficiency, and that to a less extent, or at any rate more slowly; the vitamins in the banana promote growth." (Dr. Eva Sopp in the "Medical Review" March 1925). The ash of the husk of ripe fruit contains carbonates of potash and soda, chloride of potassium, alkaline phosphates with a little sulphate, lime, silica, earthy phosphates etc. Green plantain contains a large amount of tannin. It contains nearly as much starch as the potato, but it is inferior in nutritive value. Composition of the juice of the flower-stem of the plantain is potash, soda, lime, magnesia, alumina (with a trace of ferric oxide), chlorine, sulphuric anhydride, phosphoric anhydride, silica and carbon anhydride. The juice of the tender roots contains much of tannin.

Action.—The ripe plantain is demulcent and nutrient. The unripe one is cooling and astringent and in the dried state it is antiscorbutic. The fully ripe fruit is laxative, when taken in the early mornings. The root is antibililious, and considered to be a valuable alterative. The juice of the plant is styptic.

Uses.—The *plantain* is a nourishing food. The plantain ripens best upon its stem; if ripened apart from the stem it is not so wholesome. The *unripe fruit* is useful as a valuable article of diet, especially for those suffering from haemoptysis and diabetes, and in the dried state, or preserved with sugar it is antiscorbutic; it is also useful in diarrhoea. *Flour* made *of green plantains* dried in the sun, is used as *chappatis* in cases of

dyspepsia with flatulence and acidity. A slight *gruel* made of banana flour mixed with milk is said to be a nice and easily digestible article of diet in cases of gastritis. *Banana dessert*, banana in *syrup*, banana *toast*, dried bananas, *baked bananas* etc., are the various forms in which this valuable fruit is used for eating. The *ripe fruit* is beneficial to anaemic persons on account of the iron contained in it, and is a valuable food in chronic dysentery and diarrhoea, mixed with half its weight of tamarinds and a little of common salt. A *fermented juice* of the ripe fruit is given in atonic dyspepsia. A plantain well washed may be given mixed with four ounces of milk, three times daily in cases of sprue, diarrhoea and scurvy. Raw plantains are also made into a soup for the same purpose. When used for children, sugar or sugarcandy, instead of salt, may be used. A *syrup* of bananas is popular in America for producing a refreshing beverage and as an effectual remedy in relieving bronchitis. The *ashes* produced by burning the plant contain potash salts and are therefore useful in acidity, heartburn and colic. The young *tender leaves* form a cool dressing for inflamed and blistered surfaces; the blister removed, a piece of plantain leaf smeared with any bland oil, is applied to the denuded surface and kept in place by a bandage. The dressing should be changed twice daily or oftener if required. The tender leaves are also useful as a substitute for oiled silk and gutta-percha in the water dressing of wounds and ulcers to retain the moisture, provided the piece used is sufficiently large to cover or envelop the whole part, and is kept in its place by bandages etc. The older and *greener leaves* make an

excellent *eyeshade* in eye-diseases. The *root in powder* is used in anaemia and cachexia. The *juice of the tender roots* is used with mucilage for checking haemorrhages from the genital and air passages. The *root-juice* in which burnt borax and nitre are dissolved is given in retention of urine; mixed with ghee and sugar it is given in gonorrhoea. Banana *root* is useful in the treatment of bronchocele and strumous affections. Its *cold infusion* neutralises the intoxication of a drunkard or a person under the full effect of spirituous drinks. *Fluid extract of the root* is prepared and given from 10 to 20 minims. The *juice of the flowers* mixed with curds is administered in dysmenorrhoea and menorrhagia. The *cooked flowers* are used in diabetes. The flowers and inner portion of the young stem are eaten as a vegetable. The *juice of the bark and leaf* is given to children suffering from an overdose of opium: One ounce with one ounce of ghee is a brisk purgative. A *mucilage* prepared *from the seeds* has been found of great service in the catarrhal aud mild inflammatory form of diarrhoea. A compound preparation known as *Kadalyadi ghrita* is recommended for diabetes in Raadhiyasarsangraha. It is prepared as follows:—Take of plantain flowers 12½ seers, watery juice of the root-stock of the plantain tree 64 seers; boil them together till reduced to one-fourth, and strain. To the strained decoction add four seers of prepared clarified butter and the following substances in the form of a paste, *viz.*, unripe plantains, cloves, cardamoms, red sandal-wood, wood of Pinus longifolia, *Jatamansi* root, the three myrobalans, Raphanus Sativus, and the fruit of Faronia elephantum in equal parts, one seer in all, and prepare a

ghrita in the usual way. This medicine is generally given along with some preparation of tin or other metallic medicine in diabetes. The dose is about 2 tolas.

626. **Mussaenda Frondosa;** M. Flavescens is a plant of Rubiaceae family (*Sans.*—Shrivatte; Nagvalli. *Mah*—Bhutakesi. *Bom.*—Sawad; Bhooteasse. *Hind.*—Bebina. *Can.*—Belloti-gida. *Mal.*—Vellil. *Tam.*—Vellallay. *Kon.*—Belloti; Karabphul; Sarvadi) growing abundantly on the Malabar Coast. The root contains a bitter principle—a glucoside, resin, sugar, mucilage and colouring matter. In action it is alterative and demulcent. Half a tola is given rubbed with cow's urine in white leprosy. The *root* rubbed in water is applied as a *paste* to relieve the burning of sore-eyes, and the *juice of the leaves and fruit* is applied in cases of weakness of eyesight. The *infusion* or weak *decoction* of the dried shoots is given to children to relieve cough due to cold and catarrh. In cases of jaundice two tolas of the white calycine leaves are given in milk.

627. **Myrica Nagi** or M. Sapida; M. Cerifera; M. Integrifolia, belonging to Myricaceae (*Sans.*—Katphala; Kumbli. *Eng.*—The Box Myrtle; Bay-berry. *Hind.*—*Ben.* & *Bom.*—Kaiphal. *Tel.*—Kaidaryamu. *Tam.*—Marudam-pattai. *Mal.*—Marutamtoli. *Can.*—Kirishivani. *Pers.*—Kandula; Darshishaan) is an evergreen tree of the sub-tropical Himalaya found also in the Khasia mountains and the hills of Burma. The bark contains tannin, saccharine matter and salts. It is aromatic and astringent. A *decoction of the bark* is valuable in asthma, diarrhoea connected with phthisis, fevers, lung affections, typhoid dysentery and diuresis. An *oil* prepared

from the bark is dropped into the ears in earache. The bark is eminently useful in scrofulous and aphthous affections, chronic bronchitis, chronic gonorrhoea and gleet, with atony of the digestive apparatus. A *poultice* made by bruising the bark and simmering it in water and stirring in Indian meal till it obtains the proper consistence cures scrofulous ulcers—(Tukina). The *powder of the bark* is recommended as a *snuff* in catarrh with headache, and combined with ginger as a stimulant application in cholera. With cinnamon it is prescribed for chronic cough, fever, piles etc. With vinegar it is applied to strengthen the gums. The bark is chewed to relieve toothaches. The *powder* or the *lotion of bark* is applied to putrid sores. *Pessaries* made *of the bark* are used to promote the menses. A compound powder of the bark known as *Katphaladi Churna*, consisting of the bark of Myrica sapida, tuber of Cyperus rotundus, root of Picrorrhiza kurroa, Curcuma zedoaria, Rhus succedania and the root of Aplotaxis auriculata, in equal parts, is given in doses of about a drachm with the addition of ginger-juice and honey in affections of the throat, cough and asthma. *Katphal* is the bark and not the fruit. A *paste of the seeds* with stimulant balsams is mixed with ginger and externally used as a rubefacient application to the forearms, calves, and extremities during the collapse stage of cholera. With catechu, asafoetida and camphor a paste of it is applied over piles with benefit. The *arillus* is used as an ingredient in numerous carminative mixtures. *Fruits* when boiled yield a kind of wax called *myrtle wax* which is used as a healing application to ulcers.

Myriogyne Minuta—See Centipeda Orbicularis.

628. MYRISTICA FRAGRANS. M. Officinalis; M. Moschata; M. Aromatica.

(*N. O.*—MYRISTICACEAE.)

Sans.—Jati-phalam. *Eng.*—Nutmeg. *Fr.*—Muscadier; Musque. *Ger.*—Achter muscatnussbaum. *Hind. Duk.* & *Ben.*—Jaephal. *Cash.*—Zafal. *Bom. Punj. Guz.* & *Mah.*—Jayiphal; Javantri. *Tel.*—Jajikaya, *Tam.*—Jadikay. *Can.*—Jajikai. *Mal.*—Jatika, *Cing.*—Jadika, *Burm.*—Zadi-phu. *Malay.*—Bush-pala, *Pers.* & *Arab.*—Zauz-bawwa.

Sans.—Jatipatri. *Eng.*—Mace. *Fr.*—Macis. *Hind. Can. Tel. Mah.* & *Guz.*—Jaepatri. *Ben.*—Jotri. *Punj.*—Jauntari. *Cash.*—Jowwatri. *Bom.*—Jawantri. *Tam.* & *Mal.*—Jadi-pattiri. *Cing.*—Vasavasi. *Burm.*—Zadi-phu-apoen. *Malay.*—Bunga-pala. *Arab.* & *Pers.*—Bazabaza.

Habitat.—The nutmeg tree is indigenous to the Malay Peninsula and Penang. It has been successfully cultivated in Madras and Southern India. The seeds are the nutmegs of commerce, and the *arillus* surrounding the seed within the outer shell constitutes, when dried, the product known as mace.

Parts Used.—The dried seed (deprived of testa) nutmeg (B. P.), arillus, mace and wood.

Constituents.—The kernel (nutmeg) contains a volatile oil 2·8 p.c., a fixed oil, proteids, fat, starch, mucilage and ash. The mace (arillus) contains a volatile oil 8 to 17 p.c. (identical with that obtained from the kernel), a fixed oil, resin, fat, sugar, dextrin and mucilage. The fixed oil which is called "butter of nutmeg" consists of myristin and myristic acid, and a portion of the essential oil. The essential oil contains

myristicene and myristicol. The essential oil of mace is of a yellowish colour with the odour of mace and consists of macene.

Action.—Nutmeg is aromatic, stimulant and carminative; in large doses narcotic. The concrete oil is used as a rubefacient; the volatile oil is stimulant and carminative. Mace is carminative and aphrodisiac. Mahomedan writers describe nutmeg as stimulating, intoxicating, digestive, tonic and aphrodisiac. The wood is astringent.

Preparations.—Paste, Powders, Pills, Confections, Expressed oil and Decoction of wood.

Uses.—Nutmegs are closely allied to cloves and cinnamon, for which they may be substituted. They are largely employed as a flavouring agent and condiment. A *compound powder* made of nutmegs and dry ginger each five grains and *Jeera* (Caraway) 10 grains is a good carminative taken before meals. Half a drachm of the simple powder of nutmeg administered in milk is said to cure cases of summer diarrhoea. It can also be safely administered in delirium tremens, in insomnia, where opium has failed and chloral is contraindicated. Pills known as *Jatiphaladi Gutika* are made of nutmeg, Arabian dates and opium all in equal measure, macerated in the expressed juice of betel leaves and made into pills each of about 5 grains in weight are given as anodyne and astringent in dysentery, acute or chronic diarrhoea; dose is one pill three times a day. A compound powder called *Jatiphaladi Churnam* made of nutmeg, Indian hemp, camphor, cardamoms, cloves, bamboomanna and *Chitraka* (Plumbago Zeylanica) is

used as sedative, anodyne and antispasmodic in asthma, colic, neuralgia, menorrhagia, dysmenorrhoea, spasmodic cough, lumbago etc. Dose is 12 to 24 grains twice a day in honey. A *confection* or *Hulva* known by the name of *Majoonai Kuvathiabah* (manly strength) is made up of nutmegs, cloves, Boswellia serrata, root of betel leaves, cubebs, ginger and pellitory root, each two tolas, cinnamon 4 tolas, and honey 3 tolas; all finely ground in honey. It is then converted into *Hulva*. Afterwards 50 silver leaves or *Warkhai roopa* should be mixed with this *hulva*. Dose is ½ to 2 tolas twice a day with cow's milk; useful as tonic for the heart and brain and in sexual debility, incontinence of urine and general debility. An *ointment* composed of 2 drs. of powdered nutmeg, 1 dr. of tannic acid and 1 ounce of lard is an excellent application for itching and irritable haemorrhoids.—(Dr. Shoemaker). A *medicated oil* made of one pulverized nutmeg and a quarter seer of sweet oil boiled together till uniformly mixed, has a magical effect in relieving the painful cramps in cholera when rubbed on the affected parts. The following oil is said to be a specific for impotency. Take a tola each of Nutmegs, Soda biboras and Arsenic sulphide, pound them in a mortar and mix two seers of extracted juice of Jasmine leaves and 12 *paoh* of Sesame oil. Boil this mixture till all the moisture is absorbed and only the oil remains; then sift it and keep in a corked phial. This oil should be rubbed over the generative organs which should then be wrapped up with betel leaves. This process continued for 21 days will renovate weak and inactive organs—(Kaviraj Pundit

J. L. Duveji). The *concrete oil* of nutmeg is used in mild cases of ringworm and is added to pomades to stimulate the growth of the hair; it is also used as an ingredient in ointments and plasters. Mixed with sweet oil it makes a good liniment for chronic rheumatism, paralysis and sprains. The essential oil is administered in atonic diarrhoea and dysentery to relieve pain, and is used in combination with other stimulating oils as a stimulant innunction and in plasters for chronic rheumatism. The dose of powdered nutmeg or mace, is from 5 to 15 grains; of the oil—from 1 to 3 drops; of the spirit (1 in 10)—½ to 1 drachm. Mace is useful in low stages of fever, in consumptive complaints, humoral asthma, and with aromatics in wasting and long-continued bowel complaints. When roasted it as well as nutmeg is useful in choleraic diarrhoea, flatulent colic and some forms of dyspepsia, obstructions of the liver and spleen. *Infusion of nutmeg* is said to be useful in quenching the thirst of cholera patients. A *paste* of it is used as an application to the head in headache, palsy etc., a *poultice* of it applied round the eyes is said to strengthen the sight.

629. **Myristica Laurifolia** is a common wild nutmeg tree found in Madras, but its nutmeg as well as the mace lacks aroma, fragrance and the therapeutic value.

630. MYRISTICA MALABARICA.

(*N. O.*—Myristicaceae).

Sans.—Kamuk; Malati. *Eng.*—Bombay Mace or Country or Malabar Nutmeg. *Bom.*—(the nut) Jangli Jaiphal; (mace), Rampatri. *Kon.*—Kayphal. *Can.*—Kanagi.

Habitat.—This tree is indigenous to the Koncans, Canara and Malabar.

Parts Used.—The seeds and arillus.

Constituents.—The seeds contain 40 p.c. of fat and the mace, 63 p.c. In each case the fat is associated with red resin.

Action.—Local stimulant.

Uses.—The seed of this tree is larger and more oblong than the true nutmeg, but lacking in fragrance or its aroma, and inferior as an internal remedy. The *concrete oil* when boiled with a small quantity of any bland oil is regarded an excellent application to indolent and ill-conditioned ulcers ; and also as an embrocation in chronic rheumatism. The oil in which the seed is boiled is a useful instillation in cases of earache. The Arillus *Rampatri* is considered to be a nervine tonic; it is used in stopping vomiting, also as a substitute for the true mace, but is destitute of aroma.

631. Myrsine Africana belonging to Myrsineæ (*U. P.*—Guvaine. *Punj. Cash. & Hind.*—Bebrang; Baibarang) is a small shrub found in the Himalayas from Cashmere to Nepal. The *fruit* is regarded to be a powerful cathartic vermifuge especially for tapeworm. The plant yields a *gum* which is prescribed for dysmenorrhoea. It is also laxative in dropsy and colic. Continued use is said to produce high colored urine.

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632. MYRTUS CARYOPHYLLUS.

(*N. O.*—MYRTACEAE.)

Sans.—Lavangaha. *Eng.*—Cloves. *Fr.*—Girofla. *Ger.*—Gewurznelkev. *Ben. Guz. Can. Duk.* & *Mah.*—Lavang. *Hind.*—

Launga. *Tam.*—Kirambu. *Tel.*—Karavappu. *Arab.*—Karanaphul. *Pers.*—Mekhaka.

Habitat.—India and Ceylon.

Parts Used.—The fruit, dried flower-buds and oil.

Constituents.—A heavy volatile oil 16 to 20 p. c., a camphor resin 6 p. c., caryophyllin or eugenin—a crystalline substance (which is convertible into caryophyllic or eugenic acid with the aid of nitric acid,) tannin (convertible into gallo-tannic acid), woody fibre, gum etc. Caryophyllin "occurs in silky stellate needles". The oil distilled from cloves contains (1) eugenol 85 to 92 p. c., chemically resembling phenol, (2) acetyleugenol, (3) caryophyllene, a sesquiterpene, furfural and methyl-amyl-ketone.

Action.—Cloves are general stomachic, carminative, aromatic and antispasmodic; externally the oil is antiseptic, local anaesthetic and rubefacient. Internally it increases the circulation, raises blood-heat, promotes digestion of fatty and crude food, promotes nutrition and relieves gastric and intestinal pains and spasms. It stimulates the skin, salivary glands, kidneys, liver and bronchial mucous membrane. It is excreted in the breath, perspiration, bile, milk and urine.

Preparations.—Paste; Oil, dose is ½ to 3 minims; Essence; Tea, dose is 1 to 4 ounces; Infusion (1 in 40), dose is ½ to 1 ounce.

Uses.—Cloves are generally used in curry foods and condiments. Medicinally they are used to correct griping caused by purgatives, to relieve flatulence, and to increase the flow of saliva. Combined with other spices and rock-salt clove is given to relieve colic, indigestion and vomiting. An *infusion* of cloves is given to appease thirst—

(Chakra). A pill called *Chatuhsama vati* made up of cloves, ginger, *ajowan* and rock salt in equal parts and made into 8-grain pills is used in indigestion. A pill made of cloves 4 parts, *Bhang* (leaves of Cannabis Indica) 4, long pepper 6, pellitory root 6 and honey 8 parts, is given in giddiness, dyspepsia and general debility; dose is 1 to 2 pills of 5 grains each. Another *pill* or *powder* made up of cloves and dry ginger each 5 parts, *ajowan* and rock salt each 6 parts is useful in indigestion; dose is 5 grains. A mixture of equal parts of cloves and chiretta has excellent effect in debility, loss of appetite and in convalescence after fevers —(Waring). An infusion of Senna (1 in 10) to which are added cloves and ginger 3 grains each to the ounce of the infusion makes a good aromatic purgative. A wineglassful of hot water to which are added 5 drachms of bruised cloves and 20 grains of bicarbonate of soda is a nice draught taken before meals for indigestion. A powder called *Lavangadhi churnam*, made of Cloves, dry ginger, black pepper and fried borax taken in equal measure is useful in bronchitis. Dose is 20 to 60 grains gradually dissolved in the mouth and swallowed; it should be taken three times a day. This powder macerated in the decoction of Achyranthes aspera and the roots of Plumbago zeylanica and made into pills of 5 grains each are taken in doses of 1 to 4 pills three times a day in coughs and bronchitis. A pill called *Devakusumadi Rasa* containing Cloves, *chandana* (sandal), saffron and mercuric chloride, is given in doses of 1 to 4 pills of one grain each, three times a day in syphilitic affections as an alterative and tonic. This was recently tested in cases of secondary syphilis, in which "the patients derived marked benefit

from them"—(Dr. Koman in Indigenous Drugs Report, Madras). Externally the oil is used as an application in rheumatic pains, sciatica, lumbago, to the head in headaches and to the tooth in toothaches, by stuffing the painful dental cavities with cotton wool moistened with a drop or two of clove oil. Cloves heated over flame, and kept in the mouth and juice swallowed improves the breath and relieves sorethroat; also strengthens the gums. A *paste* made of them and applied to the forehead and to the nose-bridge is a popular remedy in headache and coryza.

633. **Myrtus Communis** is a shrub belonging to Myrtaceæ, (*Eng.*—The Myrtle. *Fr.*—Myrte. *Ben.*—Vilayati Mehndi. *Hind.*—Murad; Baragasha. *Guz.*—Makali-na-patran. *Arab.*—Sutre Sowa; (fruit) Hab-ul-as; cultivated in many parts (in gardens) of India. The *ripe berries* contain a volatile oil (oil of myrtle) resin, tannin, citric acid, malic acid, sugar etc. The *plant* is stimulant and astringent. The fragrant volatile oil distilled from the leaves is antiseptic and rubefacient. It is generally employed in perfumery. It is used in affections of the respiratory organs and the bladder, and the *oil* is a local application in rheumatic affections. A *fixed oil* is obtained from the berries; it strengthens and promotes the growth of hair. The *powder of leaves* is a useful application in eczema and intertrigo and also for wounds and ulcers. The fruit, *myrtle berry*, is carminative and given in diarrhœa and dysentery in the form of *infusion*; it is also useful as injection in hæmorrhages, internal ulcerations, deep sinuses, leucorrhœa and prolapsus of the uterus. It also renders the vagina narrow. As an antiseptic it is used as a wash for fœtid ulcers. The infusion

or the decoction is useful as a mouth-wash in aphthæ. A *syrup* made by macerating two ounces of the bruised seeds in twelve ounces of distilled water for three hours and then adding sugar and boiling for half an hour over a gentle heat, is useful in diarrhœa and dysentery in doses of ½ to 1 oz. A *powder* made by taking two drachms of the berries, 1 drachm of gum acacia and two drachms of *Kharanubasmi*, and reducing them to a fine powder is also useful in diarrhoea and chronic dysentery; dose is ½ to 1½ drachms.

Nageia Putranjiva.—See Putranjiva Roxburghii.

Napeta Malabarica—See Anisomeles Malabarica

Narda Spica & Nardus Indicus—See Nardostachys Jatamansi.

634. **Nardostachys Grandiflora** (gross blumige Narda) is a species found in Nepal and Kumaon possessing the medicinal properties of the true Nard in less pronounced degree—(Chakraverthy).

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635. NARDOSTACHYS JATAMANSI.

(*N. O.*—VALERIANEAE.)

Sans. Can. Duk. Tel. & Ben.—Jatamansi. ("Shock" head of hair). *Eng.*—Musk-root; Indian Spikenard. *Fr.*—Nard Indien. *Ger.*—Achte Narde. *Gr.*—Narde Indike. *Hind. & Punj.*—Jatamashi; Bal-chir. *Cash.*—Bhut-jatt; Kukilipot. *Arab.*—Sumbul-hind. *Pers.*—Sunbuluttib. *Tam.*—Jatamashi. *Mah.*—Jatamavshi. *Mal.*—Jatamanchi. *Cing.*—Jaramanshi.

Habitat.—This herb is growing at great elevations up to 17000 feet on the Alpine Himalaya, in Nepal, Butan and Sikkim.

Parts Used.—The Rhizome and Oil from the rhizome.

Constituents.—A volatile oil 0.5 p. c. (oleum Jatamansi, the active principle), resin, sugar, starch, bitter extractive matter and gum.

Action.—Aromatic, tonic, nerve stimulant, carminative, antispasmodic, deobstruent, diuretic, and emmenagogue ; sedative to the spinal cord. It promotes appetite and digestion.

Preparations.—Oil, dose is 2 to 6 minims. Tincture or fluid Extract, dose is ½ to 2 drachms. Infusion, dose is 1 to 2 ounces.

Uses.—Jatamansi is generally used as an aromatic adjunct in the preparation of medicinal oils and in perfumery. *Jatamansi* is a good substitute for the official Valerian. It is employed in the treatment of hysterical affections, especially palpitation of the heart, nervous headache, chorea, flatulence, etc. It is said to be useful also in menopause disturbances, hystero-epilepsy and similar nervous and convulsive ailments. The dose is 30 to 40 grains in powder. It may be usefully combined with a few grains of camphor and cinnamon. Susruta recommends the following decoction in epilepsy :—Take of the pulse of Phaseolus Roxburghii, Barley, Jujube fruit, seeds of Crotolaria juncea, Bdellium, Jatamansi root, the ten drugs collectively called *dasamula* and chebulic myrobalan, equal parts and prepare a decoction in the usual way. This decoction is to be administered with the addition of clarified butter and goat's urine. The *volatile oil* from the rhizome can be used in these diseases. It is used in very many diseases of the digestive and

respiratory organs, and in jaundice. It is said to be useful also in leprosy. It is also employed mixed with sesamum oil for rubbing on the head as a nerve sedative. It is said to promote the growth and blackness of hair. A *fluid extract* prepared with an ammoniacal menstruum or tincture (1 in 10) is suitable for administration. In all cases it may be advantageously combined with camphor, ammonia and other remedies of the same class. It may also be given in *infusion* (1 in 40) in doses of a wine-glassful twice or thrice daily. The following are a few very useful home remedies:—(1) Take of Jatamansi 4, Cinnamomum tamala 1, Cubeba officinalis 1, Anise seeds 1, Dry ginger 1 and sugar 2 parts. Reduce the ingredients to a fine powder and mix. Dose is ½ to 1½ drachms. Used in flatulence, colicky pains, gastrodynia, and hysterical affections. (2) Take of Jatamansi 2 drs., Pistacia khinjuk ½ dr, Polyporus officinalis 1½ drs, and aloes 20 grains. Reduce the whole to a fine powder and mix. Dose is 15 to 20 grains. Used in epilepsy, hysteria, and convulsions. (3) Take *Jatamansi* 5, Cloves 6, Cardamoms 8, Cinnamomum cassia 8, Koshta (Saussurea Auriculata) 6, Alpinia galanga 6, Cyperus pertenuis 6, Dry ginger 6, Saffron 4, White pepper 6, Balsamedendron opobalsamum 5, Valeriana wallichi 5, Chiretta 10 and Castoreum 4 parts. Mix and make a decoction. Dose is 1 to 1½ ozs. Used as a tonic in general debility and seminal weakness. (4) Take of Jatamansi, *Sulinja*, Balsamodendron opobalsamum, Valeriana wallichi, *Ud* (Aquilaria Agallochum), Pistacia khinjuk, Cinnamomum and saffron each 3 *mashas*, salt, *Hanzil* 1¼ tolas, Jpomoea turpetham 1¾ tolas, *Ailwa* 4 tolas and

water. Make pills about the size of wild plum. Used in tubercular adenitis—(Jauhar Hikmat).

636. Naregamia Alata, belonging to genus Meliaceae (*Eng*:—Goanese or country Ipecacuanha. *Mah*—Tinpani; Pittvel; Kapur-bhendi. *Goa.*—Tri-folio. *Can.*—Nela naringa. *Mal.*—Nolanarakam. *Kon.*—Bhui-naringa) is a small woody shrub growing in Western and Southern India. The drug *i. e.* the root and stems divested of their leaves have emetic properties, like those of ipecacuanha, generally employed in doses of from 12 to 20 grains. It is used in same doses as a remedy in acute dysentery. It contains an alkaloid "Narigamine" an amorphous residue of a brittle consistence. It forms crystalline salts with mineral acids and thus differs from emetine and also differs from it in not giving any colour with chlorinated lime and acetic acid. The bark of root also contains wax, gum, asparagine, starch, but no tannin. The drug has recently been tried in small doses with considerable success as an expectorant, in chronic forms of bronchitis, where there is a thick, scanty and tenacious expectoration, and in bronchial catarrh with asthmatic tendencies and heart difficulty. The dose of the fluid extract is from 5 to 20 minims as an alterative and expectorant and from 15 to 40 minims as an emetic. The *juice* of the plant mixed with cocoanut oil is used in cases of psora.

Narthex Asafoetida.—See Ferula Asafoetida.

637. Nasturium Officinale of Cruciferae genus (*Eng.*—Water-cress. *Kumaon.*—Piriya halim) is found near hill stations such as Simla, in Rohilkhand, Punjab and Ceylon. It is used as a salad on account of its appetis-

ing and antiscorbutic properties. The essential oil consist chiefly of phenyl-ethylen-ethiocarbide. Dr. Harold Scurfield writing in the British Medical Journal urges its greater use among town people. According to him it probably contains all the Vitamines and it is likely to remedy the dietary errors caused by urbanisation. Pillows stuffed with it are said to relieve sleeplessness.

638. **Nauclea Cadamba** (*Sans.*—Dhara-Kadambo. *Ben*—Keli-kadamba. *Hind.*—Haldee. *Mah.*—Dharkalambu. *Can.*—Dharujakaur. *Tel.*—Magulikarimi) is a Rubiaceous tree (Cinchonaceae) and a variety of *Kadamba* found in most tropical parts of India especially in Bengal. "It is bitterish acrid, astringent, refrigerant, aphrodisiac, antibilious and beneficial in convulsions and poison".—(Kaviraj N. N. Sen Gupta). The *juice of its capsules* is used in Malabar in colic. Its *leaves* are used for bandaging boils with thick layers of them and plaster made of them and bamboo manna are applied to suppurating boils.

639. **Nauclea Cordifolia** or Adina Cordifolia or N. Ovalifolia is a native of the forests of Sylhet known as "Shal". The bark is said to be bitter like cinchona and is used in the treatment of endemic fevers and bowel complaints.

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640. NELUMBIUM SPECIOSUM.

(*N. O.*—NYMPHACEAE.)

Sans.—Svetakamala; Pankaja; Shatapatra; Padma; Kamala (white). Kokonad (pink); Induvara (blue). *Ben.*—Padma. *Eng.*—Egyptian or Sacred Lotus. *Fr.*—Nelumbo. *Ger.*—Pactige nelumbo. *Hind.*—Kanwal. *Arab. & Pers.*—Nilufer. *Mah. Can.* & *Kon.*—Kamala. *Tel.*—Tamara; Erra tamara (red). *Tam.*—Tamarai; (red)—Shivappu Tamarai;

Ambal. *Mal.*—Aravindam. *Can.*—Tavare. *Cing.*—Nelum. The entire plant including root, stem and flower is called *Padmini.* The torus or receptacle for the seed is called *Karnikara.*

Habitat.—This large aquatic herb with its elegant sweet-scented flowers is generally met with in tanks and ponds throughout India.

Parts Used.—Flowers, filaments and anthers, seeds, leaves and roots.

Constituents.—The rhizome and seeds contain resins, glucose, metarbin, tannin, fat and an alkaloid similar to nupharine identical with that obtained from Nuphar-luteum.

Action.—The seeds are demulcent and nutritive; the filaments and flowers are cooling, sedative, astringent bitter, refrigerant and expectorant. The root is demulcent.

Preparations.—Syrup of dried flowers, dose—1 to 3 drachms. Compound decoction (1 in 10) of flowers and filaments with liquorice and sugarcandy, dose is ½ to 1½ ounces. Powder of seeds, dose is from 10 to 30 grains. Confection of seeds. Paste of leaves.

Uses.—This is held in great regard by the Hindus on account of its flowers, called Padma or Kamala, which are sacred to Laksmi the goddess of wealth and prosperity. Medicinally the entire plant, the root, flower, stalks and leaves are all useful. The *flowers, filaments* and *juice of the flower-stalks* are useful in diarrhoea, cholera and in liver complaints and also in fevers; it is recommended also as cardiac tonic. The *compound decoction* is useful in bilious fevers. The *honey* formed in the flowers by the bees feeding upon the padma

is called *padmamadhu* or *makaranda*. This is very useful in eye diseases. The *syrup of flowers* is used in coughs, to check haemorrhage from bleeding piles and in menorrhagia and dysentery. The *tubers of the white lotus* boiled in gingelly oil are rubbed on the head to cool the head and eyes. The *expressed juice* is also employed instead of pieces of the tuber. The root is mucilaginous and given in piles. The *seeds* are used as an application in leprosy and other skin affections. The seeds with those of Euryale Ferox* are used as an article of diet to diminish venerial desires. The pistils are used with black pepper externally and internally as an antidote in snake poisoning. In bleeding piles the filaments of the lotus are given with honey and fresh butter or with sugar—(Bhavaprakash). The large *leaves* are used as cool bed-sheets in high fever with much burning of the skin. Also a *paste of the leaves* made with sandle-wood is used locally for the same purpose. The *leaf stalks* are used as a cooling application to the forehead in cephalalgia. The lotus flowers and fresh leaves ground with sandal-wood or emblic myrobalans also form a cooling application to the forehead in cephalalgia, to the skin in erysipelas and to other external inflammations.

641. Nephelium Lappaceum (*Eng.*—Rambutan. *Fr.*—Ramboutan. *Ger.*—Zwillingspblaume) is a lofty tree belonging to Sapindaceae, cultivated in South China, East Indies and Assam for its fruit which is

*__Euryale Ferox__ (*Hind.* & *Ben.*—Makhna, *Bom.*—Makhanna) is a water-lily plant belonging to Nelumbiaceae found in ponds in Northern, Central and Western India. The seeds are farinaceous and when fried are known as *Dhani.*, *Dhani* is nutritive and an article of food. It is also a powerful tonic. The seeds are said to be astringent, aphrodisiac, expectorant, emetic and beneficial in *Vata*, and *Pitta*. They are regarded as useful in checking urethral discharges.

eaten. It is oval, somewhat flattened, reddish and covered with soft spines or hairs. The edible part is an aril which is of pleasant subacid taste and is used as a refrigerant in fevers—(Chakraverthy).

642. Nephelium Litchi (*Eng.*—Lichi tree; Chin fruit tree. *Ger.*—Litchibaum. *Ben.*—Lichu) is also a lofty tree indigenous to South China, but cultivated in Bengal for its fruit. The fruit is nearly globular with a thin and brittle red-coloured shell. The pulp when fresh is white and nearly transparent, sweet and jelly-like, containing a single brownish-red seed. The pulp is given in fever to quench thirst"—(Chakraverthy). It is cooling, demulcent and aphrodisiac.

643. Nephelium Longanum (*Eng.*—Longan-tree; Dragon's eye. *Ger.*—Longanbaum) is a species growing in South China and Assam, the fruit of which is smaller than lichi, quite globular and nearly smooth, and is used like lichi, but is of a less agreeable flavor—(Chakraverthy).

644. Nerium Antidysentericum (*Hind.*—Pandra-kuda. *Ben.*—Kurachi) is a species found in tropical India. Its bark has tonic, antiperiodic and astringent properties and like Holarrhena Antidysenterica is used in dysentery. The seeds are used as lithontriptic, anthelmintic and aphrodisiac; in dysentery, chronic pulmonary affections; and toasted they are given in infusion to allay the vomiting in cholera. *Pessaries* composed of the bark and seeds are supposed to favour conception, and are used after delivery to give tone to the soft and lacerated parts.—(Chakraverthy).

Nerium Devaricatum—See Tabernamontana Coronaria.

645. NERIUM ODORUM;
N. Oleander.

(*N. O.*—APOCYNACEAE.)

Sans.—Karavira; Svetapushpa; Ashvamaraka; Pratilasa; Raktapushpa. *Eng.*—Sweet-scented oleander; Roseberry Spurge. *Ger.*—Wohlriechender. *Hind.* & *Cash.*—Kaner; Karabera. *Ben.*—Karabi. *Mah.*—Kanera. *Guz.*—Kanher. *Tel.*—Ganneru; Karaviramu; Kasturipatte. *Tam.*—Kanaveeram; Alari. *Can.*—Kanagilu; Paddale. *Kon.*—Dhavekaneri. *Arab.*—Sumula-himara; Kharazahrah. *Pers.*—Dephali.

Habitat.—This small evergreen shrub is wild in Afghanistan and Northern India and cultivated in gardens for its flowers which are given as an offering to the gods.

Parts Used.—The root and root-bark.

Constituents.—The tuber contains two bitter non-crystallizable principles "Neriodorin" (insoluble in water) and "Neriodorein" (soluble); both are powerful heart poisons; a glucoside, rosaginine, an essential oil and a crystalline body, neriene identical with digitaline; tannic acid and wax. The leaves contain an alkaloid Oleandrine; a glucoside, pseudo curarine also neriene and neriantine.

Action.—All parts of the plant are poisonous. The root and the root-bark are powerful diuretic and cardiac tonic like strophanthus and digitaline. Oleandrine, if hypodermically injected causes the heart's beats to fall from 75 or 100 to 10 or 12; if continued for some time the heart ceases to beat and with it the respiration. The drug is a powerful resolvent and attenuant, but only for external use.

Uses.—There are two varieties of this plant, namely the white and the red-flowered. The properties of both

are identical. The fresh roots of the white variety known in Bengal as *Sveta Karabi*, are intensely poisonous as are also the leaves, bark and flowers. The *bark* is not used internally in any form. The *root* is used externally, made into paste with water and applied to haemorrhoids, in cancers and ulcerations and also in leprosy. The root is used for applying or tying to the ear of the patient suffering from fevers. For this purpose the root is removed on Sunday. The *paste* forms a useful *Lep* in scorpion stings and snake bites, especially of that known as *Phursa*. The *powder of the root* is rubbed to the head in headache. A *paste of the root-bark and leaves* also is used externally in ringworm and other skin complaints. The *decoction* of the leaves is applied externally to reduce swellings. The *leaf-juice* is given in very small doses in snake-bites and other powerful venomous bites. The antidote is ghee. The *flowers* of the white variety dried, mixed with equal quantity of pure tobacco powder, and a little cardamom powder, and the whole reduced to a fine powder is used like snuff in cases of snake-bites. Criminal records show that the root is used to procure abortion. A medicated oil known as *Karaviradya Taila* is recommended by Chakradatta and it is prepared as follows—Take of Sesamum oil 4 seers, decoction of the root of Nerium Odorum 8 seers, cow's urine 8 seers, Plumbago rosea root and baberang seeds, each half a seer in the form of a paste; boil them together and prepare an oil in the usual way. This oil is used in eczema, impetigo, and other skin diseases. The root beaten into a paste with water is recommended to be applied to chancres and ulcers on the penis—(Sharangdhara). The fresh juice of the young

leaves is poured into the eyes in ophthalmia with copious lachrymation—(Chakradatta). The *fresh juice* of the young leaves is dropped into the eyes in ophthalmia with copious lachrymation—(Chakradatta).

646. Nerium Psidium. (*Sans.*—Peeta karabira. *Ben.* & *Hind.*—Haldikarabi) is the yellow flowered variety. For further particulars see Nerium Odorum and Thevatia Nerifolia.

Nerium Tinctorium (*Kon.*—Kalo.kudo)—See Wrightia Tinctoria.

647. Nerium Tomentosum (*Hind. Bom. & Mah.*—Kala inderjav; Dudhi; Dharuli. *Ben.*—Dudhkarava. *Tel.*—Tallapal; Koilamukri; Peddapala. *Kon.*—Atgo kudo, Tamdo-kudo) is a species of Apocynaceae found throughout India. The bark and root-bark are believed to be useful in snake bites and scorpion stings. A preparation from the bark is said to be useful in menstrual and renal complaints.

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648. NICOTIANA TABACUM; N. Havanensis; N. Rustica.

(*N. O.*—SOLANACEAE.)

Sans.—Tamrakuta. *Eng.*—Tobacco. *Fr.*—Tabac. *Ger.*—Gemeiner Tabac. *Hind. Pers. & Mah.*—Tambaku. *Ben.*—Tamak. *Arab.*—Tanbak. *Tel.*—Pogaku. *Tam.*—Pugaielai. *Can.*—Hogesoppu. *Mal.*—Pukayil. *Kon.*—Dhurapan. *Tulu.*—Pugere.

Habitat.—The tobacco plant is originally a native of America. It is now quite common in India, being cultivated to a large extent in many parts of Bengal, Bombay and Burma and in Madras and Travancore. N.

Rustica is cultivated and prepared in some parts of Upper India, Bengal and Punjab. It is known as East Indian tobacco.

Parts Used.—The dried leaves and a dark-brown acrid, empyreumatic oil obtained by distillation, stalks and the herb.

Constituents.—Nicotine, a colourless oil; nicotimine the isomeride of nicotine and a colourless alkaline oil; nicoteine a colorless alkaline liquid and nicotelline, crystalline colourless needles, these four alkaloids have been isolated. Besides these nicotianin, a volatilisable camphoraceous principle, resin, albumen, gum, extractive matter and ash containing a large amount of salts such as sulphates, nitrates, chlorides, phosphates, malates and citrates of potassium, ammonium, calcium etc.

Action.—The juice of the leaves is sedative and antispasmodic and a powerful insecticide. Dry leaves are powerfully sedative (lowering arterial tension), nauseating, emetic and sometimes purgative. Nicotine is highly toxic. It affects both the central and peripheral nerves and increases the activity of the secreting glands. It causes at first a rise and then a fall in blood pressure and induces contraction of the stomach wall resulting in nausea and vomiting. The respiration is at first rapid and shallow, then somewhat deeper, but eventually becomes slower, and if not interrupted by convulsions gradually becomes weaker, death resulting finally from paralysis of respiration. Nicoteine appears to be somewhat more poisonous than Nicotine. Tobacco used in moderation causes in those accustomed to its use, a gentle exhilaration or a state of quietude and repose. Its excessive use produces dyspepsia,

general anemia, amblyopia from neuritis and cardiac distress. Prof. C. H. Hull, after an exhaustive investigation of the physiological and psychological effects of smoking has recently indicated that smoking "markedly increases the pulse rate and markedly increases the tremor of the hand thus confirming and extending the results of earlier observers"—(Popular Science Siftings). So an habitual smoker's pipe while stimulating his heart, interferes with the steadiness of his hand.

Preparations.—Powder, Poultice. Paste, Smokes, *Guraku* & Pill.

Uses.—Tobacco is used in the form of cigars, cigarettes, *veedees* and cheroots for smoking; some use it in powder as snuff and others with lime and pan for chewing. A preparation made chiefly by North Indians for smoking is as follows.—The coarsely-powdered tobacco is mixed with unrefined sugar (*gur*) and aromatic and fragrant substances, sometimes with sandal-wood oil, patchouli leaves, otto of roses, musk and other perfumes, and made into a black-looking conserve known as *guraku*. A portion of this is placed with live charcoal in the *chilam* of the *hookah*, made commonly of a cocoanut shell or of metal, and which contains water through which the vapour is passed in smoking. This practice, in some parts of India, is common with women and children as with men. Smoking rapidly affects the hearing especially where there is a hereditary predisposition to deafness, or caused by frequent renewals of inflammation of the nasal or throat passages. It is thus in winter chiefly that smoking even in moderation affects the hearing—(Dr. Ferrant of Lyons). This result occurs not only in hard smokers but also in persons

living in an atmosphere vitiated by the smoke of tobacco. Those who snuff or chew tobacco are exposed to the same risks as smokers. Excessive use of tobacco causes dyspepsia, diseases of the liver, anaemia, loss of vision or blindness, throat trouble, mental fatigue and weakness, heart troubles etc. Internally tobacco is rarely used on account of its poisonous properties. In recent years *nicotine* has been recommended for hypodermic injections in tetanus and strychnine poisoning, and the salicylate as a remedy for certain skin affections. *Nicotine sulphate* has also been recommended as a veterinary anthelmintic. Nicotine the alkaloid is efficient in strychnine poisoning. Dose is $\frac{1}{20}$ to $\frac{1}{10}$ up to 2 minims in two hours. A *paste of the tobacco powder* or *snuff* made with castor oil is applied to the navel to relieve colic. A *decoction* of tobacco has been used as a local application to relieve pain and irritation in rheumatic swellings, syphilitic nodes and skin diseases, and as a means of inducing muscular relaxation, thus aiding in the reduction of strangulated hernia and dislocations. Bhishagratna Pundit J. L. Duveji recommends a medicated oil of tobacco leaves for the cure of rheumatism. It is prepared thus.—A fluid extract of tobacco is first obtained by steeping ½ seer of good tobacco leaves in 2 seers of water for 12 hours and pressing well and sifting the liquid through clean cloth. Then mix with it 1 seer of sesame oil and 1 *chhatak* of aconite and boil the whole till all the moisture is absorbed leaving only the medicated oil. Again sift the oil through a clean piece of cloth and keep in a corked bottle. This is used for rubbing on the affected parts in all sorts of rheumatic affections—Gout, lumbago, pain and swelling

in the joints, sciatica etc. *Tobacco* has been recommended as an easy and sure remedy for snake-bite in "Practical Medicine":—"About 5 tolas of tobacco should be dissolved in 10 tolas of water and the mixture strained. The dregs are thrown away and the solution drunk off by the patient. If the person bitten be senseless the tobacco water should be poured down the throat, or if lock-jaw has set in, it should be passed through the nostril. In about 5 minutes after the administration of the drug, the person will commence vomiting, and as the vomiting will go on, the effect of the poison will be removed. The patient will thus be brought round in about an hour. It is common knowledge among country folk that no snake will pass through a tobacco field. Tobacco is the antidote for snake poison." Tobacco *smoking* is resorted to with excellent effect in many cases of cough, whooping cough, obstinate hiccup, spasmodic laryngitis, asthma, nervous irritability and sleeplessness. Tobacco snuff is useful in nasal polypi, nasal catarrh, headache, chronic giddiness and fainting. The tobacco *leaves* are made hot and applied to the abdomen in colic and gripes. A *poultice of tobacco leaves* is applied to the spine in tetanus. In orchitis the upper surface of the leaf painted with *silarasa* is applied to the painful swollen parts. A *leaf stock* is introduced into the rectum of children to relieve constipation. Its ashes mixed with sweet oil is a useful application to bleeding sores. The *water from the hookah* is diuretic and the *black oil* which collects in the pipe stem is used on tents to heal up sinuses and is dropped into the eye to cure night blindness and purulent conjunctivitis. A *paste* made with snuff, lime and the powdered bark of Calophyl-

lum Inophyllum (*Undi*) is applied in orchitis. A *pill* made of snuff, catechu, cinnamon, cardamoms and *trikatu* (a compound preparation of equal parts of *pipali, miri* and *sunth*) and honey is useful as a carminative and digestive along with betel leaves, nut, spices, aromatics etc. The dose of the pill is two grains.

Nigeia Putranjiva—See Putranjiva Roxburghii.

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649. NIGELLA SATIVA; N. Indica; Carum Carui; C Bulbocastanum; C. Nigrum; C Gracile; Cuminum Nigrum.

(*N. O*—RANUNCULACEAE.)

Sans.—Krishna-jiraka; Upakunchika: Aranyajeeraka. *Eng.*—Small fennel or Black Cumin. *Fr.*—Cumin noir. *Ger.*—Schwarzer kummel. *Gr.*—Melanthion. *Hind.*—Kalajira; Kulanji. *Ben.*—Mugrela. *Bom.*—Kelanji. *Guz.*—Kadujeeroo. *Mah.*—Krishnajira. *Arab.*—Kamune-asvad. *Pers.*—Siyahdanah. *Tel.*—Nallajilakara. *Tam.*—Karunjiragam. *Can.*—Kari-jirige. *Mal.*—Karinchirakam. *Kon.*—Karijire. *Burm.*—Satmung. *Cing.*—Kaluduroo.

Habitat—This plant is cultivated in some parts of India for its seeds.

Parts Used.—The dried fruit and the seeds.

Constituents—The seeds contain a yellowish volatile oil 1·5 p. c. and a fixed oil 37.5 p c., albumen, sugar, mucilage, organic acids, metarbin, melanthin resembling helleborin, ash 5 p. c. moisture and arabic acid, The volatile oil is the active constituent. It consists of (1) Carvone 45 to 60 p. c. an unsaturated ketone; (2) terpene or d-limonene also called carvene and (3) Cymene.

Action—The seeds are aromatic, diuretic, diaphoretic, stomachic, stimulant and carminative; also anthelmintic and emmenagogue. Locally the oil is anaesthetic.

Uses.—The *seeds* are used as a condiment in curries. The seeds about half a drachm, given with butter-milk to cure obstinate hiccup. The seeds are employed as a corrective of purgatives and other medicines in doses of half to one drachm in the form of tincture (1 in 10), and are also useful in indigestion, loss of appetite, fever, diarrhoea, dropsy, puerperal diseases, etc. They have a decided action as a galactagogue; a *decoction of the seeds* is given to recently-delivered females in combination with a few other medicines; it also stimulates uterine contraction. In doses of 10 to 20 grs., they are useful in amenorrhoea and dysmenorrhoea and in large doses cause abortions. The seeds form a very useful remedy in worms. With sweet oil the *decoction* forms a useful application in skin diseases. Brayed in water its application removes swellings from hands and feet. The seeds scattered between layers of woollen clothes, shawls, etc., preserve them from the ravage of insects. For this purpose they are mixed with powdered camphor. The seeds have also antibilious property and are administred internally in intermittent fevers and to arrest vomiting after they are roasted and mixed with treacle; dose is 2 drachms. The seeds fried, bruised, tied in muslin bag and smelt relieve cold and catarrh of the nose by constant inhalation. In intermittent fever nigella seeds slightly roasted are recommended to be given in two-drachm doses with the addition of an equal quantity of treacle.—(Chakradatta). In loss of appetite and distaste for food

a *confection* made of nigella seeds, cumin seeds, black pepper, raisins, tamarind pulp, pomegranate juice and sanchal salt with treacle and honey is said to be very useful—(Chakradatta); dose is 1 drachm. In the after-pains of puerperal women, Chakradatta recommends the administration of nigella seeds with the addition of long-pepper, sanchal salt and wine. In puerperal diseases such as fever, loss of appetite and disordered secretions after delivery, the following preparation called *Pancha jiraka paka* is used:—Take of nigella seeds, cumin seeds, aniseeds, *ajowan*, seeds of Carum sativum, Anethum sowa, *methi*, coriander, ginger, long-pepper, long-pepper root, plumbago root, *habusha* (an aromatic substance), dried pulp of the fruit Ziziphus jujuba, root of Aplotaxis auriculata and Kamala powder each one tola, treacle 100 tolas, milk one seer, clarified butter 4 tolas. Boil them together and prepare a confection. Dose is about a drachm every morning.—(Bhavaprakash). A confection known as *Jawarish-ai-Kammon* is composed of the following:—Nigella sativa 15 tolas, White pepper and black pepper each 3½ tolas, Cinnamon bark 1½ tolas, leaves of Ruta graveolens 4½ tolas, Ginger conserve 12 tolas myrobalans conserve 18 tolas, Confection of roses 30 tolas, and sugar 30 tolas. Dose is 1½ tolas, three times a day; used in diarrhoea, indigestion, dyspepsia and sour belching; it removes foul-breath and watering from the mouth. For obesity the following powder is recommended in ILAJ-UL-GURBA:—Take of *Lakh Mugsul* 7 *mashas*, Nigella seeds 12 *mashas* and *Ajowan* 12 *mashas*. Mix and make a powder. Dose is 3 *mashas* (about half a drachm). Karabadin Kadri recommends the following decoction

for dyspnoea :—Take of Nigella seeds, dry ginger, *bansa*, root of Aplotaxis auriculata and *Dhamaya*, each 3 *mashas* and make a decoction and mix sugarcandy. The above is to be taken at intervals of 3 to 4 hours.

Nima Quassioides—See Picrasma Quassioides.

Nista Tetrapetala—See Samadera Indica.

650. **Nyctanthes Arbor-Tristis,** belonging to Oleaceæ, (*Sans.*—Parijata; Siphalika; Rajanikasa. *Eng.*—Night Jasmine; Weeping Nyctanthes. *Hind.*—Har; Harsinghar. *Ben.*—Seoli; Singhar. *Punj.*—Kuri; Laduri. *Mah.*—Partaka; Khurasli. *Tel.*—Pagadamalle; Shwetasurasa. *Tam.*—Manjapu; Pavala-Malligai. *Can.*-Parijata. *Mal.*—Manpumaram. *Kon.*—Pardik) is a small tree with its fragrant flowers found wild in the forests of Central India and Sub-Himalayan regions; it is commonly cultivated in gardens in many parts of India. The flowers contain an essential oil similar to that of jasmine and which is utilised in perfumery. The leaves contain an alkaloidal principle named Nyctanthine; they also contain an astringent principle, a resinous substance, colouring matter, sugar and a trace of an oily substance. The fresh *leaf juice* is a mild cholagogue and a safe purgative for infants. It is given with honey in chronic and bilious fevers. Some preparation of iron is also given along with it. As anthelmintic it is given with honey mixed with common salt. In the form of *infusion* in doses of 2 ounces it is useful in fever and rheumatism as diaphoretic and diuretic. A *decoction of the leaves* prepared over a gentle fire is a specific for obstinate sciatica—(Chakradatta). Six or seven *young leaves* rubbed up with water and a little fresh ginger are

administered in obstinate fevers of the intermittent type. The *powdered seeds* are employed as a paste to cure scurvy, affections of the scalp etc. About 5 grains of the *bark* are eaten with betelnut and leaf to promote expectoration of thick phlegm—(Dymock).

Nyctanthes Sambac—See Jasminum Sambac.

651. **Nymphæ Alba or N. Versicolor; N. Odorata; Castalia Alba**—(*Eng.*—White waterlily. *Sans.*—Kumuda) is a European species introduced into Cashmere. In Bengal it is found with white or pink petals or mixed, in shallow autumn flood waters.—See Nymphæ Lotus.

652. **Nymphæ Cyanea** (*Eng.*—East Indian blue water-lily) is found in shallow ponds, especially Bengal where the flowers are used as astringent and refrigerant—(Chakravarthy).

653. **Nymphæ Edulis or N. Esculenta** (*Ben.*—Sota sunndi) is a species of water-lilies found in Bengal and East Indies where its starchy root, capsule and seeds are used as food and also medicinally—(Chakravarthy).

654. **Nymphæ Lotus; N. Rubra; N. Stellata,** belonging to Nymphaeceae, (*Sans.*—Nilotpala; Raktotpala; Hallaka; Kumuda. *Eng.*—Water-Lily. *Hind.*—Nilofar; Chota Kanval. *Ben.*—Saluka; Raktambal; Nal. *Guz.*—Nilopal. *Mah.* & *Bom.*—Krishnakamal; Lal kamal. *Tel.*—Allikada; Teilakaluva. *Tam.*—Vellambal; Indiravacham. *Can.*—Bile-Naidile; Bile-Tavare. *Mal.*—Vellanpal; Neerampal. *Kon.*—Dhuve Salaka. *Uriya*—Rangkain. *Duk.*—Alliphul. *Cing.*—Olu-et-olu.) exist in three varieties, the white, red and blue, and is found to grow in tanks and marshes throughout the warmer

parts of India. The root contains gallic and tannic acids starch, gum etc. In action it is demulcent, diuretic and and nutrient. The flowers of N. Stellata are called *Utpala* and the whole plant is called *Utpalini*. The *flowers* are said to be "refrigerant and alleviative of cough, bile, vomiting, giddiness, worms and burning of the skin".—(N. N. Sen Gupta). A *syrup of the flowers* ($1\frac{1}{2}$ ozs. if fresh or $\frac{1}{2}$ oz. if dried) made with 1 ounce of sugar and 5 ounces of water is useful in doses of 2 to 3 drs., in remittent and other high fevers, heat apoplexy and inflammatory diseases of the brain. The flowers of N. Stellata are used in coughs and dysuria. The medicinal uses of these plants are the same as those of the corresponding parts of Nelumbium Speciosum already described. The *filaments* of these plants are considered astringent and cooling and useful in burning of the body, bleeding piles and menorrhagia. In menorrhagia the filaments of N. Stellata are given with the addition of Sanchal salt, Nigella seeds, Liquorice powder, curdled milk and honey.—(Chakradatta). The roots and seeds are edible, the latter forming the diet known as *Dhapar-koki*. The small *seeds of N. Lotus* called *bheta* are fried in heated sand and used as a light, easily digestible food. The *seeds of N. Stellata* are used in diabetes. The *tubers of the red variety* when boiled form a very beneficial diet in cases of piles. The *root-stock* is eaten after boiling and mixing it with milk and sugar. Its *powder* is given in dyspepsia, diarrhoea and piles. A *decoction of flowers* is given in palpitation. A compound decoction called *Utpaladi Sritam* is recommended in Bhavaprakash; it is made up of the filaments of N. Lotus, N. Stellata and N. Rubra,

of the white variety of Nelumbium Speciosum and Liquorice root, equal parts, in all two tolas. This decoction is said to be useful in thirst, burning of the body, fainting, vomiting, haemorrhage from the internal organs and bleeding from the womb during gestation.

655. **Nymphae Malabarica** is a species of water-lilies found in Malabar where the flowers are used in coughs and gastrorrhagia.

Nymphae Nelumbo—See Nelumbium Speciosum.

656. **Nymphae Pubescens** is a species indigenous to tropical Africa, Bengal, East Indies and Java, where a decoction of its root (which is edible) is employed in dysuria and haemorrhoids and the leaves in the form of a salve in ophthalmia—(Chakravarthy).

Nymphae Stellata.—See Euryale Ferox, foot-note on page 591.

657. **Oçhrocarpus Longifolius** (*Sans.*—Punnaga. *Eng.*—Alexandrian Laurel. *Guz.*—Retinagakesara; Goriundi. *Mah.*—Tamra nagkesara; Suringi; (fruit) Undana. *Tel.*—Surapoona. *Tam.*—Naggesur-pu. *Can.*—Gardundi. *Kon.*—Suraing. *Pers.*—Naramushka) is met with in the forest of Western Peninsula from Canara to Concan. The *fruit* is edible. The dried *flower buds* are stimulant, aromatic, stomachic bitter and astringent. They are used as fragrant adjuncts to decoctions and medicated oils. They are used like cinnamon, cardamoms etc., in great thirst, irritability of the stomach and excessive perspiration and also given in dysentery with benefit. A *paste* made of them is used to fill up the cavities of caried teeth to relieve toothache.—See also Mesua Ferrea.

658. Ocimum Album of the genus Labiateae, (*Sans.*—Sukla tulasi; Ajaka; Gambheram; Gandhapanirajaka. *Bom.* & *Mah.*—Ran-tulasi. *Tel.*—Kukka-tulasi. *Tam.*—Ganjankorai. *Can.*—Nayi-tulasi. *Mal.*—Kattarama-tulasi. *Kon.*—Ram-tulasi) is a species indigenous to southern India. The plant has aromatic, carminative, diaphoretic and stimulant properties. During fever when the extremities are cold the *leaves* made into a *paste* are applied to the finger and toe-nails. The same preparation is used to cure parasitical diseases of the skin, such as ringworm, etc. The *leaf-juice* is given to children in cold, catarrh and bronchitis in doses of ½ to 2 drachms.

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659. OCIMUM BASILICUM; O. Anisatum or Basilicum Citratum.

(*N. O.* LABIATAE).

Sans.—Bisva tulasi; Varavara; Manjariki. (seeds Rehan. *Fr.*—Basilic Cultive. *Eng.*—Sweet Basil. *Ger.*—Basilien-kraut. *Hind.*—Babui. *Cash.*—Hazbo. *Duk.*—Sabza. *Ben.*—Babui-tulasi. *Pers.*—Pharanjamushk. *Tel.*—Bhu-tulasi; Vebudipatri. *Tam.*—Tirunirupachhai; Karandai. *Can.* & *Kon.*—Kam kasturi. *Mal.*—Ram-tulasi; Tirunitri. *Burm.*—Kala pingain.

Habitat.—This small shrub, indigenous to Persia and Sindh, is cultivated in gardens in India.

Parts Used.—The herb and seeds.

Constituents:—The leaves contain a yellowish green essential oil which if kept for a time crystallizes and is then known as Basil-camphor. The essential oil contains a new terpene.

Action.—Diaphoretic, carminative and stimulant. The seeds are mucilaginous, demulcent and diuretic. The juice of the plant is anthelmintic.

Uses.—The whole plant is aromatic; the leaves and leafy tops have a pungent taste and clove-like odour. The *seeds* are useful in catarrh, chronic diarrrhoea, dysentery, gonorrhoea, nephritis, and internal piles; they also relieve the after pains of parturition; they have an aphrodisiac property and the dose is from 1 to 3 drachms; steeped in water they swell into a mucilaginous jelly; and this is taken with the addition of sugar in the above-named diseases. The following *compound powder* of seeds is recommended for dysentery in Jauhar Hikmat.—Take of seeds of Ocimum pilosum 5 tolas, seeds of *Murd* $3\frac{3}{4}$ tolas, *Bar Tung* (Plantago psyllium), *Simeg*(Arabic), *Gile Armani* (Armenian Bolos), *Tukhm Khuskhas* (Poppy seeds), each $3\frac{3}{4}$ tolas, Tukhm khurfa (*Portulaca oleraceae*) *Tukhm Khimaz*, & *Nishashta* each $1\frac{3}{4}$ tolas. Mix and make a powder. Dose is 8 to 12 *mashas*. The *juice of the leaves* is dropped into the ear in earache and dullness of hearing. Mixed with a little ginger and black pepper the leaf-juice is given during the cold stages of ague. The *leaves* dried and *powdered* and used like snuff are said to dislodge maggots from the nose. A 12 per cent *decoction* of the plant used as irrigation in nasal myosis produces anaesthesia and acts as a parasiticide and antiseptic, so that the larvae which cause the disease are rendered inactive and expelled. It has long been in use in Bengal with like effect for a similar affection known as *Pinash*—(K. L. Dey). The following is recommended for asthma by Bhishagratna J. L. Duveji.—Take in equal parts

each of long Zedoary, stem of the Lily, *Gulancha*, Cinnamon, Basil leaves, cardamom, Cyperus rotundus, long pepper, Costus specious, Phyllanthus niruri, dried ginger, Bhimseni camphor and black eagle-wood, and pound them in a mortar and sift through a clean piece of cloth and mix double the quantity of sugar. Dose is ½ a tola to be taken morning and evening.

660. **Ocimum Canum** (*Sans.*—Gramya; thiksna-mânu. *Eng.*—Rosary Tulasi. *Santal.*—Bharbhari. *Tel.*—Kuppatulasi. *Tam.*—Gunjamkorai. *Can.*—Nayitulasi. *Mal.*—Kattu Ram tulasi) a species closely related to O. Basilicum is met with on the plains and lower hills of India. Its uses are like those of O. Album.

661. **Ocimum Caryophyllatum** (*Sans.*—Marubaka. *Ben.*—Gandhatulasi. *Hind.*—Golatulasi) is a species found in Bengal. It has two varieties—white and black; the former is used for medicinal purposes. "It is bitterish acrid, stimulant, light, palatable, generative of digestive fire, fragrant, bilious, and alleviative of wind, phlegm (*Vata*, *Kafa*), worms, leprosy, *sula* pains, flatulence, loss of appetite, scorpion stings and diseases of skin"—(Kaviraj N. N. Sen Gupta).

662. **Ocimum Gratissimum**; O. Frutescens or Citratum zeylanicum, (*Eng.*—Shrubby Basil. *Fr.*—Basilic de-Ceylon. *Sans.*—Ajeka; Vantulasi. *Ben.* & *Duk.*—Ramtulasi. *Hind.*—Banjari. *Guz.* & *Mah.*—Ajavala. *Tel.*—Nimma tulasi. *Mal.*—Kattei-tulluva. *Tam.*—Elumicham tulasi. *Arab.*—Faranjmishk. *Pers.*—Raihane Qaranfulli; seeds—:Balanki-khurd) a species indigenous to Ceylon and South sea islands, is also met with in Nepal, Bengal, Chittagong and Deccan. It is

styptic, stimulant, demulcent and carminative; it is generally combined with expectorants in cough mixtures. *Infusion of the seeds* is used in doses of ½ to 1 ounce in urinary disorders, such as gonorrhoea, scanty and scalding urine etc. *Leaf-juice* is also given in such cases in rice water. Locally the leaf-juice mixed with *guli-armani* is used as an application to swollen hands or feet, as well as in skin complaints. In stomach ache the *leaf-juice*, and for vomiting of infants and children the *seeds ground* in honey are given. *Baths* and *fumigations* of the plant are used in rheumatism. The aromatic roots are used like balm.

663. **Ocimum Longifolium** or O. Grandiflorum is a species found in Assam and Southern India. The *leaves* are made into a tea and used in the treatment of diseases of the kidneys and bladder and other urinary organs.

664. **Ocimum Minimum** (*Sans.*—Maruvaka. *Eng.*—Bush-basil. *Fr.*—Petite basilic) is a species "found all over India and its leaves are used for seasoning"—(Chakravarthy).

665. **Ocimum Pilosum**; O. Hispidum or Basilicum Indicum (*Sans.*—Khara Pushpa. *Eng.*—Green Basil. *Fr.*—Basilic couvant de poils. *Hind.*—Babestul. *Arab.*—Habak. *Pers.*—Tukhm-i-rihana. *Bom.*—Tukamerian) is found throughout India. The *seeds* are mucilaginous, demulcent and nutrient, given in gonorrhoea, strangury, spermatorrhoea, and kidney diseases; also in dysentery and cough and to relieve the pains of parturition. The jelly is given in spermatorrhoea.

666. OCIMUM SANCTUM; O. Hirsutam; O. Tomentosum; O. Viride.

N. O—(Labiatae.)

Sans.—Vishnu-priya; Tulasi; Divya; Bharati; Krishna-mul. *Eng.*—Holy Basil; Mosquito plant of South Africa. *Fr.*—Basilic Saint. *Hind.*—Kala-tulasi. *Ben.*—Krishna-tulasi. *Bom. Tel. Tam. Kon. & Mah*—Tulasi. *Can.*—Kari-tulasi. *Mal.*—Shiva-tulasi. *Cing.*—Maduru-talla.

Habitat.—This small herb is found throughout India and cultivated near Hindu houses for ceremonial purposes.

Parts Used.—Leaves and seeds.

Constituents.—The active principle has not yet been isolated. For the rest see O. Basilicum.

Action.—Demulcent, expectorant and antiperidic. The root is febrifuge; the seeds are mucilaginous and demulcent. The dried plant is stomachic and expectorant. Leaves are anti-catarrhal and expectorant.

Uses.—The holy basil is the most sacred plant of the Hindus, being dedicated to Vishnu. It drives away mosquitoes. Medicinally the plant is useful in a variety of diseases. An *infusion of the leaves* is given in malaria and as a stomachic in gastric diseases of children and in hepatic affections. The *leaf-juice* is often used as an adjunct to metallic preparations which are rubbed with it into a thin *paste* and then licked up. Mixed with lime-juice the leaves are used in ringworm as a paste. The *dried plant in decoction* (1 in 10) is a domestic remedy for croup, catarrh, and bronchitis, and also diarrhœa. A *compound decoction* of the leaves of O. Sanctum, roots of Solanum jacquinii and of Clerodendron siphonanthus,

gulancha and ginger in equal parts and in all two tolas is recommended by Chakradatta in cough and affections of the chest. A *decoction of the leaves* with the addition of a little cardamon powder and about a tola of salep powder, makes a nourishing and aphrodisiac drink. The *dried leaves* are used as *snuff* in myiosis and ozaena. The *leaf-juice* poured into the ear is said to be a first-rate remedy for earache. One tola of expressed leaf-juice taken every morning is said to cure chronic fever, haemorrhage, dysentery and dyspepsia. Mixed with a little ginger, leaf-juice is given for colic in children, and one tola of it mixed with quarter tola of black pepper is given in catarrhal fever and in the cold stages of intermittent fever. *Fresh juice* is said to check vomiting and destroy intestinal worms. With honey, ginger and onion juice it forms a good expectorant remedy, useful in cough and bronchitis. The following pill is recommended in vomiting :—Take of leaves of Ocimum Sanctum, seeds of Zizyphus jujuba, and sugar-candy, each 3 *mashas*, and Black pepper 1 *masha* and pure water sufficient quantity; and make pills of this about the size of wild plums. Holy basil is said to be useful in anchylostoma as it contains thymol and the juice of the fresh leaves and the flower tops and the slender roots are used as an antidote in snake-poisoning. For ozaena an *oil* prepared with a paste of the leaves of O. Sanctum, roots of Solanum jacquinii, Baliospermum montanum, Acorus calamus, Moringa pterygosperma, long pepper, black pepper and ginger is recommended for application by Chakradatta. The *root in decoction* is used in febrile affections. In the Concan a decoction of the leaves with the flowers of Careya arborea and black pepper is given in remittent fever—(Dymock).

The following two powders are popular home remedies;— (1) Take of the seeds of Ocimum sanctum, Cocculus cordifolius, dry ginger, root of Solanum jacquini, all equal parts. Mix and make a powder. Dose is ½ drachm. Used in cough and other affections of the chest. (2) Take of the seeds of O. sanctum 5, Poppy capsules 4, Tribulus terrestris 5, Cowhage seeds 3, and Curculigo orchioides 4 and sugar 6 parts. Mix and make a powder; dose is 20 grains; used in seminal debility. The seeds rubbed with cow's milk are given for vomiting and diarrhoea, especially among children; for an infant of one year, 2-3 grains of the seed is the dose, given 3 to 4 times a day. This plant belongs to the "Surasadi" group of drugs most of which are well known vermifuges, *e. g.*:—O. Nigrum, O. Album, O. Gratissimum, Origanum Marjorana, Artemesia Indica, Embelia ribes etc.

667. **Odina Wodier** or Rhus Odina, a species of Anacardiaceae (*Sans.*—Jingini; Ajashringi; Netrashuddhi. *Hind.*—Jingan; Kashmal. *Ben.*—Jiol. *Duk.*—Besharam. *Bom.*—Shimpti. *Guz.*—Shembat. *Mah. & Kon.*—Muya. *Can.*—Shimtee; Poonu. *Mal.*—Udimaram. *Tam.*—Odiyamaram; Anicarra. *Tel.*—Oddimanu) met with generally in hotter parts of India. The bark contains tannin and ash which contains considerable quantity of potassium carbonate. The *decoction of the bark* (1 in 10) is given as astringent in doses of ½ to 1 ounce, in cases of atonic dyspepsia and general debility, particularly if combined with tincture of gentian, calumba etc. It is also used as a gargle in aphthous conditions of the mouth, and also for toothache and as a lotion for skin eruptions. The *fresh juice* of the bark is considered a valuable

application to sore eyes. The *bark powdered* and mixed with neem oil· is an application for chronic ulcers and skin diseases as impetigo etc. The powdered bark is used as a *paste* for leprous ulcers. The *gum* of the tree made into an ointment with cocoanut milk or into a *liniment* with brandy is a good application to sprains and bruises. Internally the gum is given in asthma and as a cordial to women during lactation. The *leaves boiled in oil* are also applied to sprains and bruises, to local swellings and pains of the body. For rheumatism a *paste of the leaves* mixed with black pepper is a useful application. The *juice* of the green branches in 4 ounce doses, mixed with two ounces of tamarind is given as an emetic in cases of coma or insensibility produced by opium or other narcotic.

668. **Oldenlandia Corymbosa**; O. Biflora; O. Herbacea is of the genus Rubiaceae (*Sans.*— Kshetraparpata. *Eng.*—two flowered Indian Madder. *Hind.*—Daman-papar. *Ben.* – Khetpapra. *Mah.*—Parpat. *Goa.*—Popata. *Can.* —Kallasabatrasige. *Tam.*—Parpadagam. *Tel.*—Verinellavemu) common as a weed througout India. This herb contains an alkaloid and a large proportion of alkaline salts such as sodium, potassium and calcium, mostly as chlorides. The plant is used as an alterative in low forms of fever *i. e* remittent fever with gastric irritability and nervous depression.

Oldenlandia Umbellata—See Hedyotis Umbellata.

Olibanus Thurifera—See Boswella Glabra.

669. **Onosma Bracteatum**, of the genus Boarginea. (*Vern.*—Gaozaban. *Cash.*—Kazabun. *Pers.*—(flowers) Guli gaozabana) is found in Western Himalaya,

Kashmir, Kumaon etc. It is esteemed as tonic, diuretic, demulcent and alterative, and is much prescribed as a tonic in decoction in rheumatism, syphilis, leprosy, hypochondriasis and kidney diseases. It is a good refrigerant and demulcent, relieving excessive thirst and restlessness in febrile excitement. It also relieves functional palpitation of the heart, irritation of the stomach and bladder and strangury. It is used in the form of an infusion prepared with either cold or hot water in the proportion of 1 in 20. Dose—2 to 4 ounces frequently or *ad libitum*—(Moideen Sheriff). It is said to be a good substitute for sarsaparilla.

670. Onosma Echiodes of the genus Boargineae, (*Hind.*—Ratanjot. *Nepal:*—Newar; Maharangi. *Punj.*—Laljari; Koame) is found in Kashmir and Kumaon. Its *bruised root* is used as an application to eruptions. The *leaves* possess alterative properties and the *flowers* are prescribed as a cordial and stimulant in rheumatism and palpitation of the heart—(Stewart).

Ophelia Chiretta; O. Angustifolia; O. Eligam; O. Multiflora.—See Swertia Chiretta and Gentiana Kurroa.

671. Ophiorrhiza Mungos, a herb belonging to Rubiaceæ, (*Sans.*—Nagasugandha; Sarpakshi; Patalabhedi. *Eng.*—The Mongoose Plant. *Hind.*—Sarahati. *Ben.*—Gandhanakuli. *Guz.*—Mungusvel. *Bom.* & *Mah.*—Nagavelli. *Tel.*—Sarpashi-chettu. *Tam.*—Keerippundu. *Can.*—Patalagaruda. *Mal.*—Avilpori. *Kon.*—Garda-patali.) is found in the mountains of Assam, Burma, the western peninsula and Ceylon. It contains starch, amorphous alkaloid, resin and fat. The *roots* are sold as a charm against snake-

bite, especially in Ceylon where it has a high reputation as a remedy for snake-bite although nothing trustworthy is known about it. It is also used as an antidote against the bites of mad dogs. Medicinally the drug is an agreeable bitter tonic. The parts used are the *leaves, root and bark* made into *decoction* (1 in 10) and administered in doses of half ounce as a stomachic. Dr. Koman in the Indigenous Drugs Report, Madras, says:—"The bark of the root of this plant, I was told by a physician of the west coast possessed laxative and sedative properties. He gave the following directions for its administation:—Take the bark of the root of this plant, grind it into a paste and make bolusses of the size of the lime each. Give one of these in milk early morning for three days. This would keep maniacs quiet and move their bowels freely."

Ophioxylon Serpentinum.—See Ranwolfia Serpentina.

672. **Opuntia Dillenii** or Cactus Indicus is of the Cacteae family (*Sans.*—Vidara-vishvasaraka. *Eng.*—The Prickly-pear. *Hind.* & *Ben.*—Phani-manasa; Nagphani. *Duk.*—Chappal-sund. *Guz.*—Thora they to; Nagneval *Mah.*—Vilaithi nevarung. *Tel.*—Nagajamudu. *Tam.*—Nagarkali; Palakai kalli. *Can.*—Shivaram kalli; Mullugalli. *Mal.*—Nagtali; Palakalli. *Kon.*—Kantya nivali). It is a native of America introduced by the Portuguese into India, growing in Rajputana, Madras, Mysore and other places. It contains malate of manganese, a fluid fatty acid, a trace of citric acid and wax, resinous matter, sugar etc. The fruit contains carbohydrates 41.29 p. c., fibre 32 p. c., albuminoids 6.25 p. c., fat 3.63 p. c., water 5.67 p. c. and ash 10.56 p. c.—(David Hooper). The *fruit*

is refrigerant and when baked or made into a syrup, it acts as an expectorant and is a good remedy in asthma and whooping and spasmodic cough and in hepatic congestion in teaspoonful doses three or four times a day. It has the effect of increasing the secretion of bile. The *ripe fruit* when eaten has the power of dyeing the urine red and is said to be useful in gonorrhoea as a demulcent. The *juice* and the *fruit* are both useful in gonorrhoea. The milky juice is given as a purgative in doses of 10 drops, mixed with a little sugar. The *leaves* made into a pulp are used as a poultice to allay heat and inflammation in scorbutic ulcers ; also applied with much benefit to the eyes in ophthalmia. *Hot leaf* applied to boils is said to hasten suppuration.

673. **Orchis Mascula** ; O. Latifolia ; O. Latiflora, or Allium Macleani, belonging to genus Orchideæ (*Eng.*—The Salep Orchid. *Hind. Pers.* & *Ben.*—Salabmisri. *Mah. Kon. Tel. Can. Mal.* & *Tam.*—Salamisri) is indigenous to Persia and Afghanistan from where it is imported to Bombay and other places in India. The tubers of Eulophia Campestris found in Northern India are often sold as a substitute for the true salep. A bitter variety known in India as Royal Salep (*Badshah Salab*) is derived from Allium Macleani (Liliaceae). The tubers and fecula of the root are used in medicine. The tubers contain starch 27 p. c., mucilage 48 p. c., sugar, albumen, a trace of a volatile oil and ash consisting chiefly of phosphates and chlorides of potassium and lime. The most important constituent is mucilage or starch. The salep met with in the bazaars is found in several forms—palmate and in more or less ovoid or rounded tubers, sometimes strung

together. It yields a large quantity of mucilage to water and, on boiling even with 40 parts of water, forms a thick jelly which is regarded as highly nutritious and wholesome. It forms one of the best articles of diet for weakly or convalescent persons. For this purpose, powder of salep is the best for use. It is usually cooked with milk in the proportion of one tea-spoonful to a tea-cupful of milk. It is given in all forms of wasting diseases such as phthisis, diabetes etc., and in cases of chronic diarrhœa and dysentery. *Salep* has long been esteemed in India as a great restorative and invigorator and as a tonic aphrodisiac in diseases characterised by weakness or loss of sexual powers. It was recently tried in cases of nervous debility and found beneficial—(Indigenous, Drugs Report Madras). It is also much prescribed in hemiplegia and paralytic affections. The following *confection* is used in diabetes and seminal weakness:—Take of *Salabmisri* 10, Asparagus adscendens 8,. Amorpophallus Campanulatus 6, *Behaman-i.surkha* 6, dry ginger, 6, *Todari sapheda* (white Iberis Sp.—wall flower) 4, *Todari surkha* (Red Iberis sp.—wall flower) 4, Tribulus terristris 8, Trapa bispinosa 10, Hygrophila spinosa 6, Abutilon indicum 6, Hydrocotyle asiatica 4 and Cochlospermum gossypium 8 parts. Mix and make a confection. Dose:—1 to 2 ounces. The following pills are recommended as "Prameha cure" by Bhishagratna Pundit J. L. Duveji and said to cure "20 Pramehas (general weakness) of both sexes, nocturnal emissions, nervous debility, impotency etc., etc." Take 2 tolas of each of the following:—Hypoxis orchioides (white), Asparagus racemosus, Pedalium murex, *Salaabmisri*, large cardamom, Winter Cherry

(*Aswagandha*) and refined Silajit; pound and pestle them in a mortar to be made into 60 pills. Dose is 2 pills a day (one in the morning and one in the evening) with fresh milk. Restrictions as to diet:—Avoid chillies, acids, highly spiced food, intoxicants, night keeping and sexual pleasures.

674. **Origanum Marjorana; O. Vulgare,** belong to Labiatæ (*Eng.*—Common or Wild Marjoram. *Hind*—Sathra. *Bom.*—Kamephatusa. *Ind. Bazaar.*—Marwa. *Pers.*—Marzan gush. *Tel.*—Maruvamu. *Tam.*—Marvu. *Kon.*-Mijrikamvi) are common herbs of the temperate Himalaya and Western Asia. The drug contains a volatile oil 'Oleum Marjoranae' soluble in alcohol and consisting mainly of terpene. The *plant* is used in some parts of the Punjab as a pot herb like mint. Medicinally it is carminative, stimulant, diaphoretic, emmenagogue and tonic. The *volatile oil* is used is an aromatic stimulant in colic, dyspepsia, flatulence and dysmenorrhoea ; the dose is 2 to 5 minims. Like Oleum Mentha it is used locally in rheumatism, to the abdomen in colic, to the temples in hemicrania and to the ear in earache. *Infusion* of the plant (1 in 10) is also useful for internal administration in doses of ½ to 1 ounce and externally for fomentation.

675. **Oroxylum Indicum** or Colosanthes Indica or Bignonia Indica, a small tree belonging to Bignoniaceae (*Sans.*—Prathusimbhi; Shyonaka ; Aralu; Sukanasa *Hind.*—Sonapatha ; *Ben.*—Sona ; Nasona ; Sondala. *Mah.*—Kharasinga. *Punj.*—Mulin ; Miringa; Talmorang. *Nepal.*—Karamkandu. *Bom.* Tetu ; Sauna assar. *Tel.*—Dundillum. *Tam.*—Vanga-maram. *Mal.*—Peiam) is

found growing at the foot hills of tropical India and Ceylon. The root bark contains a crystalline substance named "Oroxylon" in addition to an acrid principle, pectin, extractive matter, crystalline fat, wax, chlorophyl, astringent principle and citric acid. In action it is regarded as astringent, bitter tonic and stomachic; also anodyne and sudorific. The *root-bark* is an ingredient of the *Dasamula* of Hindu Medicine. The root bark is useful in diarrhœa and dysentery in the form of *infusion* or *decoction* (1 in 10) in doses of ½ to 1 ounce. The *powder* combined with opium is said to be a much more powerful sudorific than the compound powder of ipecacuanha. The drug in doses of 5 to 15 grs. is a diaphoretic "somewhat like salicylates without any depressing effect"—(Dr. Bose). A *bath* prepared with the bark is frequently employed in rheumatism. According to Sarangadhara the root-bark is enclosed with some leaves and a layer of clay and roasted. and the *juice* expressed from this roasted bark is given in diarrhoea and dysentery with the addition of *mochrasa*. In otorrhoea, Sarangadhara recommends the use of an *oil* prepared by boiling, over a gentle fire, sesamum oil with a paste made of the root bark. The *tender fruits* are described as grateful, carminative and stomachic. The *root* is used in dropsy and as vulnerary and the *leaves* are reputed as emollient.

676. ORYZA SATIVA.

(*N. O.*—GRAMINEAE.)

Sans.—Vrihi ; Tandula. *Eng.*—Rice (the husked seed). *Hind. Duk.* & *Punj.*—Chaval. *Ben.*—Chaul ; Dhan (unhusked). *Cash.*—Thomul. *Guz.*—Chokha. *Mah.*—Tandul ; Bhat (unhusked). *Arab.*—Arruz. *Pers.*—Biranj. *Tel.*—Pari; (paddy), Biyyam. *Tam.*—Arshi; Nelli (paddy). *Can.*—Akki; (paddy) Bhatta. *Mal.*—Ari. *Cing.*—Hal. *Burm.*—Chan. *Malay.*—Bras.

Habitat.—This is a principal food crop of India and forms the staple food of the people of Bengal, Assam Burma, and several parts of Madras and Bombay Presidencies. The plant producing it and scientifically termed as Oryza sativa is spread over the tropical and sub-tropical regions of both hemispheres.

Parts Used.—The grain, spirit and vinegar.

Constituents.—It contains more starch than any other starchy grains, but no appreciable fat, a very small quantity of proteids and a trace of mineral matter. Of the total protein 5 p.c., present in rice globulin is 0·14, albumin 0.04 and the remainder is a protein which like the glutenin of wheat is soluble in dilute alkali. Unmilled rice contains 2 to 3 p.c., of oil, but in the process of polishing much of this oil is removed with the aleurone layer. The bran from rice mills contains a considerable amount of oil. The oil extracted from the bran is highly acid, the acid value being 34·75 p.c. The approximate composition of the total fatty acids is palmitic 20,Oleic 45, and Isolinolic 35 p.c. Natural or unmilled rice contains three times the food value of white rice. Milled rice is found to be the cause of beri-beri among Indians living on such rice. Chemical composition of rice, husk, bran &c. :—

		Rice	Husk	Bran	Polished Rice
Moisture	...	12·4	3·2	9·7	10·00
Ash	...	0·4	13·2	10·0	6·7
Crude fibre	...	0·2	35·7	9·5	6·3
Carbo-hydrate	...	79·2	38·6	49·9	59·0
Protein	...	7·4	3·6	12·1	11·7
Fat	...	0·4	0·7	8·8	7·3

Action.—Nutrient; it requires some fat and albuminoids to make it a suitable diet. Rice water or *Conjee* is demulcent and refrigerant.

Uses.—This grain affords sustenance to about two-thirds of the inhabitants of the globe. The seed of the plant deprived of its husk is the rice of commerce, which is exported very largely from Burma; before it is husked it is called paddy. As an article of food rice is nutritious, easy of digestion and therefore suited for weak stomachs; having no laxative properties it suits those in whom there is a tendency to diarrhoea. Its nutritive value, however, is comparatively small. The boiling of paddy reduces its nutritive value. This loss is due to reduction in quantity of both the vitamins A & B owing to the boiling, steaming and subsequent drying of the paddy in the sun. Both the nutritive and the vitamin value of rice diminish with the degree of polishing to which it is subjected. Again washing of rice whether parboiled or raw greatly reduces both the nutritive and the vitamin value of the rice. It also causes a reduction in ash. The percentage of phosphoric acid in raw, milled and polished rice is reduced by the washing of the rice from, on an average 0·3 to 0·14. This loss of phosphoric acid is associated with a fall in the vitamin value of rice. It is found that highly

polished grain loses the aleurone layer and embryo and is therefore more subject to attacks by bacteria. Parboiling kills the enzymes in the grain, and so further helps bacillary invasion. "The *pericarp* acts mechanically by preventing surface bacterial invasion of the grain and is further aided by the protective layer of bacteria living under the pericarp of all fruit"—(Fowler). The water-soluble antineurotic Vitamin B is found in the germ of rice and which is said to contain the highest amount of it in comparison with other food-stuffs. In addition to the loss in vitamin value the evils of polished rice are:—excess of starch, poverty of protein, deficiency of mineral constituents and deficiency of antirachitic and anti-neurotic vitamins. Such a food is prone to cause gastro-intestinal diseases evidenced by diarrhoea and pathological dilatation of the stomach and other parts of the gastro-intestinal tract, by degenerative and atrophic changes in the digestive, assimilative and neuromuscular elements of the tract. Therefore *raw, home-pounded and unpolished rice* is the most nutritious. Polished parboiled rice is the most dangerous of all rices and can be protected only by preservatives and proper storage. An I. M. S. has noticed that epidemic dropsy and beriberi were most common among those who lived on poor and often partially fermented rice. He experimented by feeding fowls on fermented rice. Medicinally for young persons and invalids especially neurotic dyspeptics, *milk puddings as those made of rice* are the best. When intended to correct a diarrhœic tendency it should be used ground. At all times care should be taken to have

it well cooked and milk should be added just 20-30 minutes before the pudding is served. For to cook milk an hour or more makes the albumin difficult to digest. Where there is an irritable or inflammatory state of the stomach, bowels or kidneys *rice gruel* or *conjee* water, as it is commonly called, (Decoction 1 in 40) or thicker liquid made by boiling the rice powder in water, with a pinch of salt and a squeeze of lemon, makes a good drink, and without the lime-juice and salt in gastric ulcer. It is also useful in small-pox, measles, scarlet fever, and inflammation of all kinds, in gonorrhœa and other cases where there is pain and difficulty in passing urine. Of the several varieties of rice, *Daudkhani* is considered the best of all and suited for use by sick persons. *Kickri* the favourite invalid food in North India is rice and dal boiled together; salt, butter and ices are added to give it flavour. *Kichri* is a perfect food much like milk and if properly cooked can alone support life in adult for a long time as it contains proteids, fats, carbo-hydrates, vitamine and salts. Murjarbut-Akbari recommends in laryngitis, *rice cooked with gur* to be taken at bed time and this to be followed an hour after by a tumblerful of lukewarm water. Plain *rice-water* is used also as an enema in bowel affections. Schnabel in Am. Journ. Med. Science reports good results from the use of *rice-water mixture* in the treatment of gastric and duodenal ulcers.—One half cup of rice is boiled in five cups of slightly salted water until soft. One quart of the water is strained off and cooled. Four tablespoonfuls of lactose, the white of four eggs slightly beaten, and one-half cup of cream are then added. The mixture is kept in a cool place. The palatability of

the rice-water mixture may be influenced by the addition of peppermint, chocolate, nutmeg or coffee. It is a difficult matter accurately to determine the caloric value of this mixture, but it is quite likely that a quart will yield at least 750 calorics. From two to six ounce portions of this preparation are usually taken at hourly intervals for 13 feedings per day. After the symptoms are allayed for 24 hours at least, the caloric value of the rice-water mixture is increased by adding more cream to sugar or whites of eggs. Very quickly after this the patient goes on to either a partial or entire milk and cream mixture, and if well tolerated, passes on to soft or light diet, usually preponderantly carbo-hydrate—J. A. M. A.

Rice may be utilised in the form of *powder* and *poultice*. Its powder (*rice flour*) dusted thickly over the surface forms a very cooling and soothing application in small-pox, measles, erysipelas, prickly heat and other inflammatory affections of the skin; also to burns and scalds. It allays heat and irritation. To burns and scalds rice flour should be used soon after the occurrence of the injury and it should be dusted thickly over the whole of the burnt surface, so as to absorb any discharge that may be present and at the same time exclude the air as far as possible. If, in a few days, this becomes hardened and irritating, a warm rice *poultice* should be applied, so as to soften it and allow its easy removal; the surface should then be dressed with lime liniment (composed of equal parts of lime water and a bland oil such as olive oil, linseed oil or sesamum oil) or resin ointment. *Rice poultice* made of rice flour, is used also as a substitute for that of linseed meal. Before applying it, the surface of the poultice should be smeared

with a bland oil; this renders it more soothing and keeps it longer soft and moist. A rice poultice requires changing twice or even thrice daily. It is an excellent application to abscesses, boils, buboes, ulcers and other local inflammatory affections, inflamed piles, etc. In chronic bronchitis and other chronic coughs a large soft rice poultice is placed over the chest at bed-time and allowed to remain all night; another may also be advantageously placed on the back between the shoulder blades. The efficacy of these poultices is, in many cases, increased by the addition of a little mustard flour (1 part to 3 or 4 of rice flour), so as to produce a slight redness of the skin, or the surface of the poultice may be smeared over with oil of turpentine. Sanskrit medical works describe some preparations of rice used in sick diet and they are as follows:—(1) *Yavagu*:—powdered rice boiled with water for the use of the sick or convalescent. It is made of 3 strengths, *viz*, with nine, eleven and nineteen parts of water called respectively *Vilepi*, *Peya* and *Manda*. Sometimes instead of water, a decoction of medicinal herbs is used in preparing *Yavagu*. Thus, for example, if it is ordered to give the patient *Yavagu* made with ginger and long-pepper, take of dry ginger and long-pepper one tola each, boil in 4 seers of water till reduced to two, and strain. Now take 9, 11 or 19 parts of this strained decoction and 1 part of powdered rice for making *Yavagu* of the strength ordered. (2) *Laja* (*Ben*:—Khai) is paddy fried in a sand bath. The husks open out and the rice swells into a light spongy body. It is considered a light article of diet suited to invalids and dyspeptics. (3) *Brishta tandula* (*Muri*) is rice fried in a sand bath. This roasted rice with

shreds of grated cocoanuts is said to be a good breakfast diet for persons when there is acidity and heart-burn owing to chronic irritative dyspepsia. This is also a light preparation of rice and is given to sick persons as a substitute for boiled rice. Both of these *Laya* and *Muri* are excellent diets for dyspeptics. *Muri* is much used by the poorer classes for tiffin and early breakfast. (4) *Prithuka* (*Chura*)—To prepare this, paddy is moistened and lightly fried. It is then flattened and husked. This preparation of rice is given with curdled milk (*dadhi*) in dysentery. It is well washed and softened in water or boiled before use. *Water gruel* made of flattened rice or *chura* is a cooling drink in diarrhoea, dysentery and intestinal dyspepsia. (5) *Payasa* is a preparation of rice with nine parts of milk. (6) *Tandulambu* is water in which unboiled rice has been steeped. This sort of rice water is sometimes prescribed as a vehicle for some powders and confections. Water in which rice is washed is said to be very good for washing ulcers and wounds and physicians use it for making ointments.

A common kind of alcoholic liquor known as rice beer (*pachwai*), prepared in a very simple manner by half boiling the grain in water and allowing it to ferment slightly, is in almost universal use by the lower classes in many parts of India. A raw spirit is prepared from this liquor to a considerable extent by a rude process of distillation.

Ougeinia Dalbergioides.–See Dalbergia Oojeinensis.

677. **Oxalis Corniculata** belonging to the genus Geraniaceae (*Sans*:—Amlalonika; Changeri. *Eng.*—the Indian Sorrel. *Fr.*—Oseille a trois feuilles ou du bois.

Ger.—Gehornter Saurklee. *Punj.*—Surchi ; Khattamitha *Hind.*—Amrul. *Ben.*—Amrulsak. *Sant.*—Tando chatoon-arak. *Bom.*—Bhui-sarpati. *Duk. & Mah.*—Umbuti. *Assam.*—Chengeri tenga. *Tel.*—Puli chintaku. *Tam.*—Puli-yarai ; Puliakire. *Can.*—Huli-huniche-gida. *Mal.*—Pul-lampurachi. *Kon.*—Teltuppi) is a common garden weed found throughout India. The plant has an acid taste, due to the presence of acid oxalate of potassium. The *leaves* have long been considered cooling, refrigerant and antiscorbutic, astringent, appetising, useful in fevers and biliousness. They have been used for removing corns, warts and other excrescences on the skin. The *juice of the leaves* with pepper powder and ghee added and mixed well is applied locally to red-spots or eruptions on the skin through biliousness. Bruised with or without water and formed into a *poultice* and applied over inflamed parts, the leaves relieve pain and other inflammatory symptoms. The fresh leaves made into a curry improve the appetite and digestion of dyspeptic patients. The *fresh juice* is believed to relieve the intoxication, produced by datura ; it is also believed. on application, to remove fibres over the cornea or opacities of the cornea. The *expressed juice* of the leaves made into a sherbet with a little sugar is often prescribed in dysentery, prolapse of the rectum and also to allay thirst. The leaves boiled in butter milk given 2-3 times a day prove useful in chronic dysentery and enteritis—(Indigenous Drugs Report, Madras). Chakradatta recommends a prepara-tion called "*Changeri ghrita*" which is made thus :—Take of clarified butter 4 seers, the fresh juice of Oxalis Corniculata 4 seers, curdled milk called *dadhi* 16 seers

and the leaves of Oxalis Corniculata reduced to a paste 1 seer. Boil them together in the usual way and prepare a *ghrita*. This preparation is useful in diarrhoea, dysentery, prolapsus of the rectum, tympanites, piles and difficult micturition. Bhavaprakash gives the following process for preparing a *compound ghrita*:—Take of the fresh juice of Oxalis Corniculata, decoction of jujube fruits and ginger, alkaline water and curdled milk each 4 seers, clarified butter 4 seers and prepare a *ghrita* in the usual way. It is recommended for use in prolapse of the rectum. The plant is rubbed down with water, boiled and the juice of white onions added; this mixture is applied to the head in bilious headaches. Various preparations in which this plant forms a chief ingredient are much esteemed in the treatment of fevers, dysentery and scurvy. Sorrel should not be eaten by gouty persons.

678. **Oxystelma Esculentum** or Asclepias Rosea a climbing plant of the genus Asclepiadeae (*Sans.*—Tiktadugdha. *Hind.*—Dudhlata. *Ben.*—Khirai. *Punj.*—Gharote. *Sind.*—Doodhee. *Tel.*—Doodee-pala. *Bom.*—Dudhuka. *Mah.* & *Kon.*—Dudhani) is found wild in the plains and lower hills of India. The *fruits* are edible. A *decoction of the plant* is used as a gargle in aphthous ulcerations of the mouth and in sore-throat. The *fresh roots* are said to be used in Orissa as a specific for jaundice.

Pachyrhizus Angulatus—See Dolichos Bulbosus.

679. **Paederia Foetida** or Convolvulus Foetidus or Apocynum Foetidum is a twining plant of the genus Rubiaceae (*Sans.*—Prasarini. *Hind.*—Gandhali; Khip.

Ben.—Gandha-bhaduli. *Tel.*—Savirela. *Mah.*—Hiranwel. *Guz.*—Gandhana. *Assam.*—Bedoli sutta. *Sikkim.*—Padebiri) found in the Central and Eastern Himalaya, Western India and Bengal and Assam. It contains a volatile oil of an offensive odour, two alkaloids *viz.*—*Alpha* paederine and *Beta* paederine. The plant gives off, when bruised, a marked odour of carbon disulphide. The fruit is said to blacken the teeth and is said to be a specific against toothache. The *leaves and root* are considered wholesome and tonic and are used to a considerable extent in Bengal as a constituent of a food given to the sick and the convalsescent. The leaves are boiled and made into a soup. The offensive odour is removed in the process of cooking. The *root* is said to be an emetic ; it is also described as emollient and carminative, useful in colic, spasms, rheumatism and gout.—(Dymock). The *entire plant*, including stem, leaves and root, is used both internally and externally in rheumatic affections for which it is regarded as a specific. Externally it is used as *liniment*. Bhavaprakash gives the composition of an electuary named *Prasarini Leha*, which is made by boiling two seers of the leaves, root and stem of this plans in 32 seers of water till reduced to one-fourth, and adding to the strained decoction two seers of treacle and again boiling till it is reduced to the consistence of a thick syrup, and lastly adding, powdered ginger, long pepper, black pepper, plumbago root and the root of Piper chaba (*chavika*) equal parts, in half a seer ; dose is one tola in acute rheumatism. Several *oils* or *liniments* for external application are prepared with this plant, *e. g.* the following called *Kubja Prasarini Taila* recommended

by Chakradatta and made up of 16 substances. It is used externally in rheumatism with contraction and stiffness of the joints. After the application of the oil the affected parts should be fomented with dry heat.

680. Paeonia Emodi of the genus Ranunculaceae (*Sans.*—Chandra. *Eng.*—the Paeoney Rose. *Hind.*—Ud-salap. *Punj.* & *Cash.*—Mamokh. *Bom.*—Ud-salam, *Bhutan*—Bhuma madiya; Yet ghas.) is found in West temperate Himalaya from Kumaon to Hazara, in the upper Tons valley and Cashmere. The *tubers* of this plant are reputed to be blood purifier and antispasmodic; esteemed remedy in colic, uterine disorders, epilepsy, bilious obstructions leading to dropsy, convulsions and hysteria. In large doses the drug causes headache, giddiness, vomiting etc. The tubers contain malates, oxalic and phosphoric acids, a little tannin, sugar, starch and volatile oil. The root combined with the bruised leaves of Melia is a favourite remedy for bruises, sprains etc. The root is given to cattle to render them prolific. The *infusion of the dried flowers* is a highly valued remedy for diarrhoea. *Seeds* are emetic and cathartic.

681. Pandanus Odoratissimus or P. Sativa or Anthrodactylis Spinosa of Pandaneae family (*Sans.*—Ketaki; Dhuli puspika. *Eng.*—Fragrant Screw-pine; Caldera Bush. *Hind.*—Keora. *Ben.*—Keora, Keya. *Bom.* & *Mah.*—Kevda. *Tel.*—Mogili; Gajangi; Ketaki. *Tam.*—Talamchedi; Kedagai. *Can.*—Kedage; Mundige. *Mal.*—Kaitha; Ketaki. *Kon.*—Kedagi; Bondayi) is a shrub with fragrant flowers found wild in Southern India, Burma and the Andamans; cultivated in gardens in

Bengal. There are two varieties—the white and the yellow. The white is plentiful in *Shravan* month; the yellow in *Magh* and *Phalgun*. A perfumed oil called *Kevda Oil* is extracted from the floral bracts, by means of sesamum oil, and a fragrant *otto* and *aqua—Keorra-ka-arak* (prepared by distilling flowering tops or bracts in water 20 parts to 1 of *Ketaki*) are also prepared. Both are employed medicinally. Dose of the aqua is ½ to 1 drachm, used as stimulant, diaphoretic and antispasmodic. The oil and the otto are considered stimulant and antispasmodic and are used in headache and rheumatism. The oil is also useful in earache. In epilepsy a *powder* made of the anthers and the tops of the bracts is recommended to be frequently sniffed like snuff and in sore-throat and other throat-affections *cigarettes* made of the interior of the anthers are smoked. The *root* brayed in milk is used internally in sterility and threatened abortion. A medicinal oil is prepared from the roots. In *Prameha i. e.*, extreme heaty constitution the *root-juice* two tolas, mixed with sugar is given; or the *expressed juice* of the bracts with *Jeera* and sugar is given for 7 days. Diet is rice and curds or butter-milk; all salines should be avoided. The *fruit* or *seed* is a remedy for *Vata*, *Kaffa* and *Meha*. It acts like saffron in action.

Panicum Dactylum—See Cynodon Dactylon.

682. **Panicum Italicum**; or P. Frumentaceum is a bread yielding species of Graminaceae (*Sans.*—Kanku; Shyamaka. *Eng.*—Italian Millet; Deccan grass. *Hind.*—Samak; Kangni. *Ben.*—Kora; Syamadhan. *Mah.*—Samve. *Tel.*—Korralu. *Tam.*—Tinnai. *Can.*—Navane-akki; Kungo-gida. *Mal.*—Tina. *Kon.*—Varayi). This *seed* is

much esteemed in some parts of India as an article of food; but it has heating properties and when taken as the sole food it is apt to produce diarrhoea. It acts as a diuretic and astringent and is of use externally in rheumatism. It is a popular domestic remedy for alleviating the pains of parturition.

683. **Panicum Miliaceum** or P. Milium (*Sans.* & *Hind.*—China. *Eng.*--Millet. *Fr.*--Millet rond. *Ger.*--Achte Hirse. *Mah.*--Ralle) is a species cultivated in Africa, Western and Central India. It produces a grain which is a valuable carbohydrate food and is used as a demulcent in diarrhoea and externally as poultice.

684. **Papaver Dubium** of Papaveraceae is found in western Himalaya from Garhwal to Hazara in cornfields and in Simla 4-7000ft. From the seed capsules an alkaloid known as "aporeine" is obtained by extraction with light petroleum. The alkaloid is a tetanus poison similar to thebaine. See Papaver Rhoeas.

685. **Papaver Rhoeas** an annual herb with a milky juice (*Hind.* & *Ben.*—Lal-poshta. *Eng.*—Red Poppy. *Bom.*—Jangli-mudrika. *Mah.*—Tambde khas-khasache jhad. *Guz.*—Lal khas-khasnu jhad. *Tam.*—Shevappu ghas-ghaschedi. *Tel.*—Erra-posta kaye chettu. *Can.*—Kempu khasa-khase gida. *Malay.*—Chovanna khas-khasa chcheti) is met with in Cashmere and in several plains of India. Syrup of Red poppy (1 in $1\frac{1}{2}$ of water and $2\frac{1}{2}$ of sugar) is a preparation used as a coloring agent. The milk from the capsules is narcotic and has slightly sedative properties. —(Watt).

686. PAPAVER SOMNIFERUM.

(*N.O.*—PAPAVERACEAE).

Sans.—Khas khas. *Eng.*—Opium Poppy. *Fr.*—Oeillcte Pavot somnifere. *Ger.*—Sclafmohn. *Ben.*—Postodheri. *Tel.*—Gasagasalu. *Tam.*—Gasagasa. *Can.* & *Kon.*—Kasakase. *Mal.*—Kashakasha. *Burm.*—Bhinbin.
(opium the inspissated juice). *Sans.*—Ahiphena; Saphenaka. *Eng.*—Opium. *Hind. Duk. Ben. Punj. Arab. Pers.* and *Cash.*—Afim. *Bom. Guz.* & *Mah.*—Aphim; Appo. *Tel.* and *Tam.*—Abhini. *Can.* and *Kon.*—Affini. *Cing.*—Abin. *Burm.*—Bhin; Bhain. *Malay.*—Affiun.

Opium is the concrete milky exudation obtained by incising the unripe capsules of P. Somniferum. It is at first brownish in colour which soon changes to dark; it is bitterish in taste and of an unpleasant odour. The seeds are white, grey, or greyish black; in taste they are sweetish and oily.

Habitat.—Behar produces what is known as "Patna opium,", Benares and the United Provinces produce "Benares opium" and Central and Western India and Rajputana are the sources of what is known as "Malwa opium." Opium is also grown and produced in Nepal, Assam and Burma.

Parts Used.—The nearly ripe and dried capsules, petals, seeds, and the inspissated juice. The drug is of two varieties, with black and white seeds—Papaver nigrum and Papaver album.

Constituents.—The seeds contain a large per centage of a bland fixed oil of a pale golden colour drying easily and of an agreeable odour. The seeds are alkaloid free. Alkaloids exist in minute quantity in

seedlings after about 14 days' growth, and they increase until the seedlings begin to store albumen. As the seed ripens the alkaloid content decreases, the alkaloids being gradually consumed by the plant in effecting albumen synthesis. The inspissated juice—the opium contains a large number of alkaloids (28 in number), organic acids and neutral substances. The most prominent alkaloids are morphine 5 to 7 p. c., narcotine 2 to 8 p. c., codeine 0·2 to 0·7 p.c., thebaine or paramorphine 0·15 to 1 p.c., cryptopin 0·5 to 1 p. c., pseudo-morphine or oxymorphine 0·2 p.c., papaverine 1 p. c., narceine 0·2 to 0·7 p.c. The organic acids are meconic acid 4 p.c., lactic acid 1·25 p.c. citric and tartaric acids which exist in combination with the alkaloids. Bitter neutral principles as meconin or opianin 0·3 p.c., meconianin and porphyroxine, water 16 p.c. Opium also contains resins, a trace of volatile oil, glucose, sugar, gum, pectin, caoutchouc, wax, fat, colouring matter, odorous principles, essential oil and ash 6 p. c., containing salts of ammonium, calcium and magnesium.

Action.—(*therapeutic.*)—Poppy seeds are demulcent and nutritive, also mild astringent. Poppy capsules are astringent, sedative and narcotic; they promote talkativeness. Externally they are used as anodyne and emollient. Opium is first stimulant, then narcotic anodyne and antispasmodic, also aphrodisiac, astringent and myotic. In over-doses it is a powerful narcotic poison. (*Physiological*).—The Physiological action of opium depends upon the combined effects of the various alkaloids and other principles obtained from it. Opium in medicinal doses at first stimulates the brain, heart and

respiration ; this effect is soon followed by general depression. Generally opium is anodyne, hypnotic, antispasmodic, diaphoretic, narcotic, myotic, intoxicant and cerebral depressent. Its chief action is on the cerebro-spinal system and through the nerves it acts upon all the organs of the body ; it stimulates the generative organs ; it affects all the secretions except milk and sweat which it increases by stimulating the mammary and sweat glands. It causes dryness of the mouth and throat, lessens the secretion of the stomach and thus impairs appetite ; also diminishes bile and causes constipation, decreases the quantity of urine secreted, increases heart action and arterial tension It at first produces exhilaration of the cerebral functions, then a sort of mild intoxication followed by drowsiness and sound sleep, often disturbed by dreams, and often followed on waking by headache, constipation, indigestion and depression of spirits. Large doses produce depression of the heart, lessened activity of the cerebral cells and reduction of the blood supply to the brain centres, lowering of circulation and causing loss of body heat; the oxidation is interfered with. The cerebral depression is followed by headache, vertigo, slow and laborious respiration. In poisonous doses stertorous breathing and coma supervene, followed by feeble and slow pulse, cold clammy perspiration, contraction of the pupils followed by dilatation as the end approaches, cyanosis of the face and fingers, followed by abolished reflexes, deep coma, paralysis of respiratory centres, carbonic acid accumulation in the blood and death. *Physiological action of Opium alkaloids:*— As regards chemical constitution they fall into two main groups. One, the morphine group including morphine,

codeine and thebaine, and the other, the narcotic group including narcotine, narceine and papaverine as its principal members. The most characteristic feature of the physiological action of the opium alkaloids is their simultaneous depressing and exciting action on the central nervous system, and in this respect there is no clear line of demarcation between two groups. The five chief members—morphine, papaverine, codeine, narcotine and thebaine—all exhibit this peculiarity and as the series is descended in the order just given the narcotic action diminishes and the power of reflex stimulation increases until in thebaine a strychnine-like effect is exhibited. *Morphine* exerts both a depressing and stimulating action on the central nervous system, the former being produced mainly in the brain, the latter mainly in the spinal cord. In man the depressing action dominates the whole nervous system. Respiration is slowed by morphine, in many cases it may be deeper at first though the amount of air taken in per minute is reduced. Death ensues from arrest of respiration. The alkaloid has little affect on the circulation and this is also true of the peripheral muscles and nerves. The pupil of the eye is much contracted in morphine-poisoning until just before asphyxia when it is widely dilated. The alkaloid causes a slight fall in body temperature. Morphine is excreted mainly by the digestive tract, but after large doses it also occurs in traces in the urine. *Papaverine* is a comparatively weak poison, but in the nature of its effects stands between morphine and codeine, it produces light sleep in comparatively small doses and this does not become deeper when the dose is increased. On the

other hand, the reflex irritability is increased and large doses may cause tetanising action. It has more tendency than either morphine or codeine to slow the heart. *Codeine* resembles morphine in its general effect, but its depressing action is less marked and less prolonged while its stimulating action involves not only the spinal cord but also the lower parts of the brain. In small doses in man it induces sleep which is not so deep as that caused by morphine, and in large doses it causes restlessness and increased reflex excitability rather than sleep. The respiration is slowed less than by morphine. The pupil is contracted at first, but is dilated in the excitement stage of the intoxication. *Narcotine* generally resembles codeine in its action, but is less depressant. It is much less poisonous than either morphine and codeine. It was at one time used in India for malaria, but has long been superseded by quinine for this purpose. *Narceine* has been recommended as a hypnotic, but is believed to have very little action when pure, probably owing to the instability of its salts and the insolubility of the alkaloid itself. *Oxynarcoteine* is described as a feeble narcotic poison.

Of the derivatives of the opium alkaloids two are of special importance in medicine *viz.*—Apomorphine and Cotarnine. In the conversion of morphine into *apomorphine* the depressing action on the central nervous system is almost wholly lost, but the stimulant action remains, and is exercised over the whole central nervous system, but especially on the medulla. In very small doses apomorphine may not produce vomiting, though the secondary symptoms—such as increased perspiration—which usually

accompany this may be shown. The emetic action is due to the direct action on the medulla oblongata and not to irritation of the stomach. According to Hildebrandt *thebaine* antagonises the emetic action of apomorphine in dogs and Harnach and Hildebrandt have shown that *a* and *b* chloromorphides are also anti-emetics, the former being the more powerful. *Cotarnine.*—This decomposition-product of narcotine is used in medicine as a styptic in uterine haemorrhage but is less effective than hydrastinine and is said to produce its effect in a different way.—(Plant Alkaloids—By Dr. T. A. Henry, D.Sc. London).

Treatment of poisoning by opium.—In early stage give emetics (Zinc Sulphate, Copper Sulphate or Mustard or $\frac{1}{6}$th grain of apomorphine hydrochloride hypodermically), stomach pump or syphon to wash out the stomach with a weak solution of Potassium Permanganate (1 in 400) until the fluid returns with its purple colour unchanged; repeat this every half hour for 12 hours; prevent sleep by walking the patient about and giving strong coffee both by mouth and by rectum. Flick bare skin with towels, maintain warmth; to combat failing respiration, apply artificial respiration, interrupted galvanic current, and inject subcutaneously Liquor Atropine Sulphate every ten minutes until the pupils dilate or the pulse is quickened; Faradic battery, strychnine hypodermically in case of respiration becoming very slow; Alcohol and Ammonia as stimulants internally.

Preparations.—(of the poppy seeds):—Oil. (of the poppy heads or capsules):—Fresh prepared Syrup (1 in $2\frac{1}{2}$ of water, $\frac{1}{2}$ of spirit and $1\frac{1}{2}$ of sugar), dose is 1 drachm. Decoction (1 in 15) for fomentations etc., and poultice.

(Of opium) :--Extract (1 in 3 to 4 of water and $\frac{1}{2}$ of spirit) dose is 2 to 5 grains. Pills, Tincture (1 in 8—laudanum) $\frac{1}{2}$ to 1 drachm; Compound powders, Wine (1 in 20), dose is 10 to 60 minims; Plaster, Enema, Suppository, Liniment and Ointment; Morphine or Morphia occuring as a white amorphous powder, or shining transparent acicular prisms; Dose is $\frac{1}{10}$ to $\frac{1}{3}$ grain ($\frac{1}{4}$ of a grain of morphine is equal to 1 grain of opium.) Oleatum morphinae (1 in 60 to 1 in 10) is a local sedative. Morphine hydrochloride a white crystalline amorphous neutral soluble powder. Dose is $\frac{1}{8}$ to $\frac{1}{2}$ grain. For more preparations see B. P.

Uses.—These are varied and multifarious. The poppy seeds yield a bland fixed oil which is used for culinary purposes and for burning lamps. Medicinally it is used like olive oil in doses of $\frac{1}{2}$ to 1 drachm. The seeds themselves are innocuous and used as an article of food. They are boiled, mixed with a little oil and salt and taken as curry with rice, or they are made into balls and formed with tamarind into an acid curry. As a mild astringent they are given with sugar and cardamoms (burnt); they are useful in diarrhoea and dysentery. Poppy seeds are used as syrup in cough and asthma; they are sprinkled over some sweetmeats. They are used in insomnia. Poppy seeds and lettuce seeds 2 and 1 part respectively are soaked in water and mucilage extracted, mixed with sugar and taken in insomnia. Locally bruised poppy-heads are used as a sedative in the form of fomentations and poultice to bruises, inflamed, excoriated and swollen parts, to tender and irritable ulcers and to eyes in ophthalmia. Their decoction is used as a soothing in-

jection in cancer of the uterus. They contain a trace of opium. For fomentations etc, they should be broken up and boiled in water, and the liquor only is used. Into this, when quite hot, a flannel should be dipped and wrung out and then laid on the part affected dipping it afresh as it begins to cool. Fomentation is applied also to sprains, contusions etc. The inspissated juice is the drug known as opium. It is given internally in diarrhœa, sleeplessness, colic, intestinal and inflammatory pains. Locally it relieves pain and allays spasms. As astringent it checks haemorrhages, lessens secretions and restrains tissue changes. "It is useful in fevers chiefly during exascerbation. It is also useful in supporting the strength and calming the exhausted nervous system. It should not be given at the commencement or during the height of fever with a dry tongue. In typhus fever, small pox and typhoid fever, during low muttering delirium with subsultus and jactitations, it is highly beneficial to revive the flagging nervous system. In fever with violent delirium, wakefulness, suffused eyes and constant risings from the bed, opium given in combination with aconite renders the patient tranquil and induces sleep—(Khory). The opium procurable in the bazaars is always more or less adulterated. Of the several kinds of opium met with in India the chief are.—(1) Patna Garden opium, (2) Malwa opium. The former yields a large proportion (7 to 8 or even 10 per cent) of morphia. Of Malwa opium there are many varieties, of these the two principals are—the one occurring in flat circular cakes without any exterior covering; it yields only from 3 to 5 per cent of morphia;

the other, a superior kind occurs in balls or cakes of smaller size; it yields from 7 to 8 per cent of morphia.

Some points connected with the use of opium which should always be borne in mind are :—

(*a*) The drug should be avoided in cases of :— (1) Persons who are very intolerant to the action of opium, in whom even the smallest dose produces great nervous excitement, violent headache and vomiting. (2) Infants and young children who bear opium badly—(in diseases of childhood in which it is very necessary it should be given only under expert professional advice or superintendence and not otherwise). (3) Pregnant women, as it seems to exercise a prejudicial effect on the foetus. (4) Persons who are suffering from disease of the kidneys especially if there be a tendency to dropsy. (5) Doubt as to the advisability of giving opium. (6) Strongly marked contraction of the pupil. (7) Inflammatory and other diseases in which the tendency to death is by coma or by apnoea, rather than by asthma. (8) Congestion of the brain shown by suffused eyes and contracted pupils. (9) Bronchi filled with excessive, thick and viscid secretion. (10) Conditions with suspected venus congestion. (11) Heart-disease.

(*b*).—If the patient is a confirmed opium taker, he requires a far larger dose to produce a given effect than one not habituated to it.

(*c*).—When the use of opium is clearly indicated and the patient from any cause is unable to swallow it may be given in an enema; in this case a larger dose is required than when given by mouth.

Incompatibles.—Potassium Permanganate is able to oxidise and so destroy the medicinal and toxic properties of an equal weight of opium; the other incompatibles are alkalies, alkaline carbonates and alkaline earths, substances containing tannin, salts of lead, iron, copper, mercury, zinc and Liquor Arsenicalis.

Opium is used in many diseases such as rheumatism, tumours, cancer, carbuncles, abscesses, and ulcers, connected either with leprosy, syphilis or scrofula in which the pain, especially at night, effectually banishes sleep. An adult may commence with one grain pill or 15 drops of laudanum, taken about an hour before the usual bed-time; if this succeeds in procuring sleep it may safely be repeated nightly; if not, the dose may be doubled the second night and trebled the third night, but not beyond this quantity except under professional advice. Even these quantities after being used for a week or two if they lose much of their power, may require to be *cautiously* increased. When the pains are lessened and the patient is improving the quantity of opium should be decreased *gradually* but not left off at once. To control the sleeplessness and restlessness of delirium tremens, mental excitement or exhaustion, opium given as above may be necessary, but each dose should be combined with 4 or 5 grains of camphor in the form of pill, in fact camphor alone in doses of 2 to 3 grains every 3 or 4 hours, exercises a most soothing influence, and when this treatment is adopted, the opium at bedtime may be given alone. In acute and chronic inflammations opium acts as an antiphlogistic and removes the existing constitutional irritation. "After obstetric operations and even after surgical operations, its adminis-

tration prevents secondary fever. Neuralgias are relieved by it. In excessive excitement as in acute meningitis, puerperal mania and insanity it *should not be long continued* as it would ultimately derange the digestion and the secretions. In sun-stroke it may be used as a cure. In uraemic convulsions it acts beneficially if hypodermically injected (morphia). In traumatic tetanus its use has been followed by a great diminution in the spasms. The pain and cough incidental to diseases of the respiratory organs are often relieved by opium. Its use should be *limited* where the bronchi are filled with tenaceous secretions. In the early stages of bronchitis where the tubes are dry and the cough painful opium mitigates the suffering. In phthisis it should not be used for a long time. In asthma, irritable heart and angina it may be given in small and repeated doses with good results. In disorders of the digestive organs and chiefly vomiting and diarrhoea with colicky pains the use of opium is highly extolled. In acute dysentery it relieves tormina and tenesmus. In the chronic form it is efficiently given with astringents. In lientery it is productive of immense good. In the premonitory stage of cholera opium acts like a charm. In dysmenorrhoea and in grinding pains during labour opium is an efficient palliative."—(Khory). In fevers, especially in the advanced stages it is valuable either alone or in combination with camphor, antimony etc. In chronic gastritis, gastrodynia, nervous and sympathetic vomiting, diarrhoea, dysentery, strangulated hernia, visceral obstructions etc., it is given with the best results. In diseases of the gastro-urinary system *e. g.*, cystitis, cystorrhoea, spasmodic stricture of the urethra, also in menorrhagia,

dysmenorrhoea, irritable states of the uterus, metritis etc., it is a remedy of the highest value. Tetanus and acute rheumatism are amongst the other diseases in which opium has been employed as a sheet anchor. In cases of spasmodic affections of the bowels, violent colic, and the violent pain due to the passage of all calculi, a full dose *i. e.*, 20 to 25 drops of laudanum in a wine-glassful of omum water or infusion of sweet-flag root repeated once or twice if necessary at intervals of ½ to 1 hour, affords speedy relief. It proves, however, even more effectual if introduced into the rectum either in the form of suppository (2 grains of opium with 4 grains of soap), or in enema (30 to 40 drops of laudanum in 2 ounces of thin *conjee* water). It may also be given with great benefit in irritable states and painful affections of the kidneys. In retention of urine due to spasmodic stricture of the urethra a hot-bath and a full dose of opium (25 to 30 drops of laudanum), followed by a dose of castor oil will give relief in recent cases of no great severity, following a debauch, exposure to wet, etc. The opium given in an enema of two or three ounces of rice *conjee* sometimes succeeds when it fails if given by mouth. *Opium should never be given in Bright's disease of the kidney.* In diabetes opium occasionally produces the most beneficial results, especially in old cases occurring in the aged; the dose should be diminished or the remedy left off altogether, if it gives rise to headache or other bad symptoms. Generally persons suffering from this disease will take large doses with impunity. The Amritsagar recommends the following preparation of opium in diabetes:—Take of camphor and musk, each one part,

opium and mace, each four parts. Make into two-grain pills. They are administered with the juice of betel leaves.

In many affections of the uterus besides using opium in the form of suppository of enema, as mentioned above, *camphorated opium liniment* warmed, may be rubbed into the loins or a hot rice poultice sprinkled with laudanum, applied over the lower part of the abdomen. Internally in these cases it requires to be given in full doses combined with camphor. For the relief of after-pains 15 to 20 drops of laudanum in a wine-glassful of camphor julep or omum water or a little simple *conjee* generally affords speedy relief. In threatened abortion from a fall, over-exertion etc., in dysentery, a full dose of laudanum, and for the relief of the local pain, bearing down and straining in dysentery a small enema (30 to 40 drops of laudanum in 2 ounces of *conjee*) affords relief. Opium is a valuable adjunct to catechu and other astringents in the treatment of diarrhœa. Rasendrasarasangraha gives the composition of a pill called *Grahani kapata Rasa*, which is recommended in chronic diarrhœa and dysentery; it is prepared by taking nutmeg, borax, prepared talc and datura seeds, each one part, opium two parts and making into 2-grain pills with the juice of Pæderia Fœtida. In cases of diarrhœa with anasarca, another pill called *Dugdhavati* much used by Kavirajas is described in Bhaishajyaratnavali; it is made by taking opium and aconite 24 grains each, prepared iron 10 grains, prepared talc 12 grains, and beating them into a mass with milk and making into four-grain pills. One pill is to be

given every morning with milk. The diet is restricted to milk alone, water and salt being prohibited. For diarrhœa with high fever, Bhashajyatantra recommends another pill known as *Sambunatha Rasa* ; it is made thus :—Take of orpiment, realgar, cinnabar, white arsenic, borax, aconite and alum each one part, mercury, sulphur and opium each 7 parts ; soak them for 7 days in each of the following fluids *viz.*, juice of the leaves of Cannabis sativa, Vitex negundo, datura and *nim*. Make into 2-grain pills. These are given with ginger juice. Vomiting is sometimes speedily relieved by a few drops of laudanum (5 to 10 drops) in an effervescing draught, or a little omum-water. This drug is used as an aphrodisiac generally in combination with nervine and stimulant drugs. Sharangadhara gives the composition of a compound powder known as *Akaradi Churna* and used as an aphrodisiac. It is made up of pellitory root, ginger, seeds called *kakkola*, saffron, long-pepper, nutmegs, cloves, and red sandalwood, each 2 tolas, opium 8 tolas, rubbed together and passed through a cloth. Then sugar is added equal in quantity to all the above ingredients. Dose is grains 6 to 12 with honey.

A simple opium liniment, (readily made by rubbing down a drachm of bazaar opium in 2 ounces of cocoanut, sessamum or other bland oil) proves very useful in many external or local diseases, including chronic rheumatism, lumbago and other muscular and neuralgic pains, spasms and bruises, enlarged glands, mumps etc. Its efficacy, however, is greatly increased by conjoining it with an equal quantity of camphor liniment. This camphorated opium liniment, is an excellent application in

many painful external affections. It should be well shaken before being used. Care should be taken not to apply it to an abraded or sore surface, it is only adapted for the sound skin, and not even then if the pain is attended with much heat and redness. This camphorated liniment well rubbed in along the course of the spine is occasionally very useful in whooping cough. For stiff neck, warm laudanum rubbed in over the part answers better than liniment.

In ophthalmia attended with great intolerance of light great relief may be obtained by fumigating the eye with the vapour of boiling water containing a teaspoonful of laudanum, or a couple of grains of opium. An excellent eye-wash in these cases is composed of laudanum, vinegar and brandy each 1 part and water 4 parts. Toothache depending upon a decayed tooth is often relieved by a grain of opium put into the hollow of the tooth ; *the saliva should not be swallowed.* Earache also frequently yields to mixture of equal parts of laudanum and any bland oil inserted into the outer passage of the ear on a piece of cotton wool ; care should be taken not to push it in too far. To painful piles where there is much swelling and heat, a very soothing application is a soft rice *poultice* sprinkled over with laudanum or smeared over with simple opium liniment.

687. **Parmelia Perlata**, P. Parietina, P. Perforata, P. Karatschadalis or Lichin Odoriferous, (*Sans.*—Silavalka. *Hind.*—Charela; Phathar-ke-phul. *Eng.*—Stone flowers ; Yellow lichen ; Rockmoss. *Fr.*—Parmelia des murs. *Ger.*—Wandschildflechte. *Pers.*—Davala. *Arab.*—Hinna-i-korisha. *Guz.*—Chadila; Ghabilo. *Can.*—

Kallu-Huvu) are species of the lichen order belonging to family Parmeliaceae, found on trees, old planks, walls and on rocks on the Himalayas, Punjab, Persia etc. These lichens contain a yellow crystalline stuff, gum, sugar extractive lichenin and chrysophanic acid. They are bitter and febrifuge, astringent and resolvent, also emollient and demulcent and formerly considered useful as a diuretic; they have also soporific and sedative properties. They are used in diarrhoea, dyspepsia, spermatorrhoea, amenorrhoea and dysentery. In the form of a *poultice* they are applied to the renal and lumbar regions which is said to cause a copious flow of urine. As a *liniment* it is applied to the head in cases of headaches. The lichen is much used as an *incense* especially to relieve headache, and also in the preparation of a *masala* used for washing the hair. Its powder is applied to promote healing of wounds.

Pastinaca Grande— See Peucedanum Grande.

Pathos Officinalis—See Scindapsus Officinalis.

Paulinia Asiatica—See Toddalia Aculeata.

688. Pavetta Indica; Ixora Pavetta, belonging to Rubiaceae (*Sans.*—Papata; Pappana; Tiryakphala. *Hind.*—Papari; Kankra. *Ben.*—Kukura-chura. *Mah.*—Papadi. *Tel.*—Paputta vayru. *Tam.*—Pavattaivayr. *Can.*—Pavate; Sule-bottu-gida. *Can.*—Patta; Pavata kodi) is a common shrub found throughout India. It contains a green resin, starch, (no tannin) an organic acid and a bitter glucoside resembling salicin but more soluble. In action it is bitter tonic and aperient. The root has purgative properties. It is frequently prescribed in visceral obstructions. The *root*, together with dried ginger, is rubbed and given in *conjee* water in cases of

ascites, renal dropsy etc. A *decoction of the root* (1 in 10) is also given in doses of ½ to 1 ounce in torpor of the liver, and with ginger added, in dropsy. Mr. H. M. Birdwood calls it "Matheran Coffee". It is given in powder to children, the dose is about a drachm or more. The local *fomentation with the leaves* is useful in relieving the pain in case of piles.

689. **Pavonia Odorata** is a herb belonging to Malvaceae (*Sans.*—Bala; Hrivera. *Ben.*—Bala. *Hind.*—Sugandha-vala. *Fr.*—Pavonia Odorante. *Bom.*—Kalo-valo. *Mah.*—Kala-vala; Randodaki. *Tel.*—Muttupala-gamu; Erra kuti. *Tam.*—Peramuttai; Avibattam. *Can.*—Bala rakkasi gida) is wild in the U. P., the Western Peninsula, Sind and Burma. The herb and the roots have a musk-like odour. The *roots* are regarded as cooling, demulcent, carminative, diaphoretic, and diuretic, they enter into the composition of a well-known fever drink called *Sadanga Paniya*. The fragrant root is also used as astringent and tonic in combination with other medicines of the sort in inflammation, haemorrhage from internal organs, etc. The *leaves* and young *shoots* are used as an emollient.

690. **Pavonia Zeylonica** is a species found in Ceylon and the Andaman islands. It is used like P. Odorata.

691. **Pedalium Murex** is a succulent herb belonging to Pedalineae (*Sans.*—Gaja daunstree. *Hind. Duk. Guz. & Ben.*—Bara-gokhru. *Bom. & Mah.*—Moto-gokhru; Karonta; Ubha-gokhru. *Guz.*—Kadva-gokhru. *Tel.*—Pedda palleru. *Tam.*—Peru-neranji. *Can.*—Aneneggilu; Doddaneggilu. *Mal.*—Kattu-nerinjal. *Kon.*—Selusaran.

Cing.—Ati-naranchi. *Burm.*—Sulegi) common in the Deccan, Southern India and Ceylon. The four angled spiny fruit contains an alkaloid, fat, resin, gum and ash 5 p. c, The *fruit* as well as the *leaves* and *stems* render water or milk mucilaginous when agitated with, or steeped in them. The *infusion* thus prepared is demulcent and diuretic, useful in disorders of the urinary system such as the ardor urinae, gonorrhoea, dysuria, spermatorrhoea, incontinence of urine etc. It is said to relieve strangury and to dissolve calculi. It is generally sweetened with sugar. In gonorrhoea half a pint of the above infusion taken every morning for 10 days successively, relieves the scalding, and in many cases, a cure is effected. As it increases the flow of urine it proves useful in some forms of dropsy. The powdered leaves are given in two drachm doses with milk and sugar in gonorrhoea and gonorrhoeal rheumatism. A *decoction of the dried fruit* is used when fresh plant is not obtainable. In spermatorrhoea, impotence, and incontinence of urine about a pint of the infusion of the seeds (1 in 20) is administered daily. Water rendered mucilaginous by this plant soon regains its original fluidity, hence the infusion should be freshly prepared each time it is to be administered. The *juice of the leaves* is a local application to aphthae. The leaves are used very largely as a healing application to ulcers. Also as an emmenagogue the juice is used in puerperal diseases and to promote the lochial discharge. The *fresh leaves* and *young shoots* dipped and kept for a few minutes in boiling milk give to it a bitter taste and render it mucilaginous. Such milk is used as an aphrodisiac in seminal debility. A *poushtik* taken with milk is

made of the *powdered root* with ghee, sugar and spices.

692. **Peganum Harmala** is a glabrous bush of the genus Rutaceae (*Eng.*—Syrian Rue. *Hind.*—Harmal; Lahori. *Ben. & Cash.*—Isband. *Bom. & Guz.*—Hurmuro. *Mah.*—Harmala. *Pers.*—Ispand. *Tel.*—Shimagoranti-vittulu. *Tam.*—Shimai-azha-vanai virai. *Pushtu.*—Spail-anai. *Duk.*—Vilayati Mhendi) found in North-Western India, the Punjab, Sind and the Deccan. The seeds yield a red dye. They contain two alkaloids, Harmaline and Harmine, and a soft red-coloured resin with a narcotic odour resembling that of Cannabis Indica. Harmaline when treated with hydrochloric acid yields Harmatol in orange-red crystals sparingly soluble in water. Harmine occurs as colorless crystals. Fuming hydrochloric acid converts it into harmal, when oxidized by means of chromic acid it yields harminic acid in silky tufts. The physiological effect of these two alkaloids is to reduce the temperature. Harmaline belongs to the group of protoplasmic poisons of which the best known alkaloid is quinine and the action of harmaline and quinine is practically the same. The *seeds* are regarded as narcotic, anodyne, emetic and emmenagogue; act in large doses like ergot, savine and rue; also stimulant of the sexual organs and alterative. The *powder* in doses of ½ to 2 drachms is a good anodyne in asthma, colic and jaundice, and the watery *infusion* is similarly useful. It may be used also in the form of *tincture* (1 in 8) in doses of ½ to 1 dr., or in *decoction* of the seeds (1 in 20) in doses of ½ to 1 ounce. It is given in amenorrhoea. It increases the flow of milk and menses. It is used for a gargle in laryngitis. It is

used for procuring abortion. Wounds are fumigated by burning the seeds, the smoke being believed to have antiseptic properties, the *fumigation* is applied in palsy and lumbago also.

Pentaptera Arjuna—See Terminalia Arjuna.

Pentaptera Paniculata.—See Terminalia Paniculata.

693. **Pentapetes Phoenicea** of the genus Sterculiaceae (*Sans.*—Raktaka; Bandhuka; Bandhujiva; Arkavallabha; Pushpa rakta. *Punj.*—Gul duparia. *Ben.*—Kat-lata; Bandhuli; Doopahuria. *Hind.*—Gejulia. *Santal.*—Barebaha. *Mah.* & *Kon.*—Tambdi dupari; Banduja. *Tam.*—Nag pu. *Tel.*—Makina chettu. *Can.*—Bandure) is found throughout the hotter parts of India. It has four varieties distinguished by the color of flowers.—White, black, red and yellow. The *fruit* is officinal on account of its mucilaginous properties. The *root* is employed as a medicine by the Santals—(Campbell). It is said to be "astringent, light, antibilious, anti-phlegmonous and alleviative of wind and fever"—(N. N. Sen Gupta).

694. **Pericampylus Incanus,** belonging to Menispermaceae (*Ben.* & *Hind.*—Barakkanta) is found in Sikkim, Assam, Khassia Hills, Chittagong etc. The *roots* of this plant are held in great repute by snake charmers as an antidote to snake poison. According to Dr. Cunningham's research a *fluid extract of the roots* injected into the bitten part renders the poison inert by precipitating it when brought into direct relation with it prior to the absorption of the venom into the system generally.

Periplaca Sylvestria—See Gymnema Sylvestre.

Periplœa Indica.—See Hemidesmus Indicus.

695. **Peterospermum Aserifolium** is a species of the genus Helictereae and a variety of Cassia Fistula, (*Sans*.—Karnikara. *Hind*.—Chhota sondal. *Mah*.—Laghu-yahava. *Ger*.—Ahornblattriger Flugelsamen. *Bom*.—Olat kambal. *Duk*.—Kanier. *Tel*.—Kerugakkay; Goguchettu) found in Western India, and the *flowers* of which are used in gastralgia, leucorrhoea, and the *bruised leaves* as a hemostatic; it is said to be beneficial "in diseases of uterus, also administered in leprosy, oedema, boils and blood diseases"—(Chakravarthy).

696. **Peterospermum Heyneanum** (*Ger*.—Heyne's Flugelsamen) is a species found in Bengal and the East Indies, where the *flowers* are used in leucorrhoea, and the powdered *leaves* are smoked like tobacco in nervous headache.—(Chakravarthy).

697. **Peterospermum Suberifolium**, is a species found in Southern India, resembling P. Heyneanum, and the *flowers* of which are used in migraine.

698. **Peteroselinum Sativum** is a culinary herb of the genus Umbelliferae (*Eng*.—The Parsley) cultivated in gardens in India. Parsley contains sugar, starch, volatile oil, and a substance called "apiin." Apiol is the essential oil of parsley. It is a green liquid distilled from the root. The name is also applied to a crystalline stearoptene contained in parsley oil distilled from the seed. *Apiol* has been much recommended in amenorrhoea and dysmenorrhoea in doses of 2 to 3 minims administered on sugar or in capsules. *Pills* made of quinine sulphate 2 grains, Apiol $\frac{1}{3}$ grain, and Permanganate of

potash $\frac{1}{4}$ grain, are useful in cases of arrested menstruation accompanied by fevrish symptoms. It is said to be of service in malaria. Parsley *leaves* applied to the breasts several times a day will suppress secretion of milk effectively.—(Tukina). Bruised they are used also as a poultice for sore eyes. In minute doses apiol is said to be of service as curative of epileptic fits. The *root* of parsley has a beneficial effect on the kidneys.

699. Peucedanum Grande is a species of Umbelliferae (*Eng.*—Wild carrot. *Hind. & Pers.*—Daku; Dukku. *Bom.*—Baphalle) found on the hills of Western India. The *fruit* contains an essential oil of a light yellow color. The *infusion* (1 in 10) of the fruit is used in doses of $\frac{1}{2}$ to 1 ounce like that of fennel seeds, as carminative, diuretic and stimulant in flatulency, gastric and intestinal disorders etc. The fruit is used in curries as a flavouring agent.

700. Peucedanum Graveolens, is a herb belonging to Umbelliferae (*Sans.*—Misariya; Satapushpi. *Eng.*—The Dill. *Fr.*—Persil des marais. *Ger.*—Garter dill. *Hind. & Punj.*—Soya. *Duk.*—Soyi. *Mah.*—Shepu. *Cash.*—Soi biol. *Ben.*—Sulpha. *Guz.*—Suva-nu-bi. *Tel.*—Shatakupivittulu. *Tam.*—Shatakupivirai. *Can.*—Sabbasige. *Mal.*—Chatukuppa. *Cing.*—Sadakuppa. *Burm.*—Samin. *Malay.*—Adaspudus) cultivated in Indian gardens for culinary purposes. The dried ripe fruit (dill fruit) contains a volatile oil 3 to 4 p. c., and a fixed oil. The *volatile oil* is composed of anethine, carvol and another hydrocarbon. In action it is *carminative,* stomachic, aromatic, stimulant, diuretic, resolvent, emmenagogue and galactagogue. The *essential oil* (about 3 to 4 p.c., contained in the fruit and the *dis-*

tilled water of the fruit are much used in flatulence, hiccup, colic and abdominal pain in children and in adults. It may be combined with Sodium bicarbonate or a little of lime water in hiccup and flatulence. It is used to diminish the griping of purgatives, and the tormina of dysentery. An *infusion* of the bruised fruits or seeds (1 in 30) is also very useful. Of this when strained and cold, the dose for an infant is 2 drachms or more sweetened with a little sugar. It is also given as a drink to women after confinement. With *methi* the seeds are fried in butter and used to check diarrhœa. The *seeds* bruised and boiled in water and mixed with the *roots* are applied externally in rheumatic and other swellings of the joints. The *leaves* are moistened with a little oil and warmed and applied to boils and abscesses to hasten suppuration.

Phalaris Zizanoides or Agrostis Verticulata or Anatherum Muricatum–See Andropogon Muricatus.

701. Phanera Macrostachya or Baulinia Macrostachya or B. Scadens (*Ben.*—Guruchi) is a glabrous climbing plant allied to Lasiobema Anguina or B. Anguina found in Sylhet and Assam. Its *juice* is used in skin lesions.—(Chakravarthy)

Phanera Variegata (*Eng.*—Mountain ebony. *Fr.*—Bauhinie Panachee)—See Bauhinia Variegata.

Pharbitis Nil.—See Ipomoea Hederaceae.

Pharmacum Litoreum—See Clerodendron Inerme.

702. Phaseolus Aconitifolius (*Sans.*—Makushtaka. *Eng.*—Tapery beans. *Hind.*—Mat. *Ben.*—Banmugoa. *Tel.*—Banmudga) is one the varieties of Legu-

minous pulses. It is a valuable food well utilised by the body, said to be "alleviative of *Vata*, *Pitta* and *Kafa*" and its infusion is said to be "antibilious, digestive aphrodisiac and cardiac".

703. Phaseolus Lunatus (*Eng.*—Lima bean. *Ben.*—Cimra) is a species growing in the tropics with flat pods used as food and as vegetables in Bengal, when pods are young.

704. Phaseolus Mungo is a leguminous pulse (*Sans.*—Mada ; Mudga. *Eng.*—Green gram. *Fr.*—Haricot mungo. Ger.—Ruhhaarige Bohne. *Hind.* & *Punj.*—Moong. *Ben. Kon. Bom.* & *Mah.*—Mug. *Tel.*—Pachhai-pesulu. *Tam.*—Pachhai-payaru. *Can.*—Hesaru. *Mal.*-Cherupayar) grown and cultivated commonly all over India. It contains about 22 p. c., of albuminoids and 54 p. c., of starch, besides oil 2 p. c., fibre 5 p. c. and ash 4 p. c. It forms a very nutritious article of diet, very wholesome suited to sick persons. It is given to relieve thirst in fevers ; when given in large quantities it is an aperient. The *soup* made of it is a best article of diet after recovery from acute illness. It is said to be useful in relieving the heat or burning of the eyes, when applied in the form of *powder*. A *poultice* of it is useful for checking secretion of milk and reducing distention of the mammary glands.

705. Phaseolus Nanus.—(*Eng.*—Bush-bean. *Fr.*-Haricot nain. *Ger.*—Fruhbohne) is a species found in Bengal, cultivated for its edible pods and the small white seeds.

706. Phaseolus Pauciflorus is a thick creeper (*Sans.*—Mudgavalli; Aranyamudgu. *Guz.*—Mugavanie.

Mah.—Mugavel; Ranmug) found in South Konkan and Goa. For uses etc., see P. Mungo.

707. Phaseolus Roxburghii, P. Radiatus is a common pulse, (*Sans.*—Masha. *Fr.*—Haricot Radie. *Ger.*—Strahlfruchtige Bohne. *Hind. Kon.* & *Mah.*—Udid. *Ben.*—Mash Kulay. *Guz.*—Arad. *Tel.*—Minumu. *Tam.*—Ulundu. *Can.*—Uddu. *Mal.*—Ulunnu) found cultivated everywhere in India. It contains albuminoids 22.7, starch 55.8, oil 2·2, fibre 4.8, and ash (containing phosphoric acid) 4.4 p.c. It has larger proportion of starch, oil and ash than the yellow seeded form of P. Mungo. It is the most demulcent, cooling as well as nutritious of all pulses, also aphrodisiac and nervine tonic the only drawback is that it causes wind (flatus); to prevent it a little asafœtida just enough to give it a flavour should be added, while it is cooked. A clear *decoction* of it is useful to a dyspeptic. It is made into *cakes* which are nutritious diet to the weak and infirm. Medicinally it is employed both internally and externally; internally in gastric catarrh, dysentery, diarrhœa, cystitis, paralysis, piles, rheumatism and affections of the liver and of the nervous system, in the form of decoction and externally also in the last three diseases. Chakradatta recommends the following decoction :—Take of the pulse of Phaseolus Roxburghii, roots of Castor oil plant, Mucune Pruriens and Sida Cordifolia half a tola each and prepare a decoction in the usual way. This decoction is given with the addition of rock-salt and asafœtida. As a nervine tonic a confection made of its *dala* is very useful. *Mashadi Modaka* is prepared thus :—Take of P. Roxburghii (without husk), Wheat, Indian barley (without husk), *Chokha*, Long

pepper, each 1, and sugar 5 parts. Make a *Ladu* by adding ghee in quantity equal to half the weight of the whole. Finally bake the whole over a gentle fire. Used in seminal debility, leucorrhœa etc. The *dala* is also useful as a preventive of attacks of cold in winter. Parched it is eaten in uterine complaints. Ordinary cooked *dala* acts as a lactagogue. *Oils* containing this pulse as their basis are useful for external application in rheumatism, contracted knee, stiff shoulder etc. For example the oil recommended for these complaints by Chakradatta and called *Svalpa Masha Taila* is made thus :—Take of the pulse of Roxburghii 8 seers, water 64 seers, boil down to 16 seers and strain. Boil the strained decoction with 4 seers of sesamum oil and one seer of rock salt till the water is evaporated. The *root* is said to be narcotic and is a remedy for aching bones. It is used as a *poultice* for abscesses and inflammations.

708. Phaseolus Trilobus (*Sans.*—Vanamudga; Mudgaparni. *Fr.*—Haricot a trois lobes. *Ger.*—Dreilappige Bohne. *Ben.*—Mugani. *Mah.*—Jangli mung) is a trilobed variety of P. Roxburghii common in Deccan and Bengal, the *leaves* of which are used as sedative, cooling, antibilious and tonic. They are applied in the form of *paste* to the eyes to improve the sight, and also in ophthalmia and in haemorrhoids. In Behar the plant is used as a febrifuge.

709. Phaseolus Vulgaris (*Eng.*—Common kidney bean. *Fr.*—Petitefeve. *Ger.*—Fasein) is cultivated for its seeds:—"the white beans, which are chiefly used as food and medicinally as emollient cataplasms"—(Chakravarthy). The *beans* have a high dietetic value due to the

large amount of proteid they contain and which exists in combination with sulphur and phosphorus.

Phectranthus Aromaticus.—See Coleus Aromaticus.

Phlomis Cephalotes—See Leucus Cephalotes.

Phlomis Nepetafolia.—See Leonites Nepetafolia.

Phlomis Zeylanica.—See Leucus Zeylanica.

710. **Phoenix Dactylifera,** P. Excelsa is a tall palm belonging to genus Palmae (*Sans.*—Pinda kharjura. *Eng.*—The Edible Date. *Fr.*—Palmier dattier. *Ger.*—Dattelpalme. *Hind.*—Pindakhejur.. *Bom.*—Khurma; Chhuhara. *Ben.*—Gharar-khejur. *Punj.* & *Kon.*—Khajur. *Pers.*—Khurmal-khushk. *Arab*—Khurmal-yab-is. *Tel.*—Karjurakaya. *Tam.*—Perich chankay. *Can.*—Gijjira-hannu) is a native of North Africa, Egypt, Syria and Arabia, but now cultivated in Sind and Punjab, chiefly in the Multan District. *Dates* are highly saccharine and contain valuable salts and iron in an assimilable form. They are very nutritive, tonic, demulcent, laxative, and diuretic in action. They contain tannin extractive matter, mucilage, insoluble matter and lime. Water in which fresh dates are *steeped for a while* is a drink given to relieve alcoholic intoxication. Milk in which clean and fresh dates are infused is a very nourishing and restorative drink to children as well as adults especially during convalescence from fevers and small-pox. Date fruits are said to quickly supply heat and repair waste. Some doctors advise dates for consumptives ; they are said to promote expectoration, soothe the chest and also prevent constipation. In Egypt, Persia and Arabia dates form the

principal food of the people. They are the main source of sustenance for caravans on their long journeys through the desert. The sweet pulpy fruit is also useful in dysentery. The *dried fruit* (*Kkaarak*) pounded and mixed with almonds, quince seeds, pistachia nuts, spices and sugar forms a *paushtik* much in vogue. It is used as an ingredient in various aphrodisiac and tonic confections. The *seeds roasted* and ground into *powder* make a beverage like coffee, it is called " date-coffee ". A *paste* made of the ground seeds is said to be applied for opacity of the cornea and to the head to relieve headaches and hemicrania. The smoke produced from the burning of the date seeds in powder, is a useful *fumigatory* for piles. A fine paste made of the seed of the date fruit and the root of Achyranthus Aspera, applied to betel-leaves like lime and made into small packets together with clove, cardamom, catechu and betel-nut powder is a popular antiperiodic remedy among Vaidyans for the prevention of attacks of Ague which is preceeded by severe shivering. Three such betel packets are recommended to be administered at intervals of one hour before the expected attack of the periodic fever. A gum *kukm chil* or the juice obtained from the stem and named *laghi* (*Kharjurni-daru*) is used as a demulcent, diuretic and refrigerant in genito-urinary affections. The spirit " *Kharjurni daru*" is obtained by distillation of the fruits.

711. Phoenix Farinifera (*Eng.*—Small Date. *Tel.*—Eechakoyya. *Tam.*—Eechamaram. *Can.*—Sanna-eechalu-mara. *Mal.*—Chitteenth) is a palm met with mostly in Malabar and Travancore. These are generally

the same as those of the above variety. The edible *dates* are prescribed in cough, asthma, also in fever and gonorrhoea. The *gum* is esteemed as a useful remedy in diarrhoea and diseases of the genito-urinary system. The *seeds*, like those of the above species, are made into a *paste* by trituration with water and applied over the eye lids in ophthalmia, keratitis and for opacity of the cornea. The *fruit* is used in foetid breath. The *fresh juice* is cooling and laxative.

712. Phoenix Peludosa (*Sans.*—Hintala. *Ben. Hind. & Duk.*—Hental) is a "remarkable tree" found in Bengal and some parts of Southern India. It is acidulous, sweet, cooling, antiphlogistic, phlegmatic, alleviative of thirst, and beneficial in wind and bile (*vata* and *pitta*)—N. N. Sen Gupta.

713. Phoenix Sylvestris (*Sans.*—Kharjjuri. *Eng.*—The wild Date Palm; the Date Sugar Palm. *Hind.*—Sendhi; Thalma. *Ben.*—Khejur. *Tel.*—Indu; Ishan-chedi. *Tam.*—Paerichhu. *Can.*—Eechalamara. *Mal.*—Katenth) is indigenous to India and is widely cultivated for the sake of its sweet sap. The dates are small and somewhat less sweet and a trifle astringent. The *sweet sap* obtained by notches cut in the tree is manufactured into *gur* or jaggary by evaporating the sap; this soft yellowish sugar is more nutritious and agreeable than cane-sugar and a good substitute for maltine and its various preparations. The *juice* is also fermented and used as an intoxicating drink for toddy (*tari*). The fresh juice is a cooling beverage. The central tender part of the palm is useful in gonorrhoea and gleet. The *root* is used in toothache and is also good in nervous debility.

Phyllanthus Disticus or P. Longifolius (*Sans.*—Lavani. *Ben.*—Noari)—See Averrhoea Acida.

Phyllanthus Emblica—See Emblica Officinalis.

714. **Phyllanthus Multiflorus** belonging to Euphorbiaceae (*Fr.*—Phyllanthe multi flore. *Ger.*—Vielblutige Blattblume. *Hind.*—Kamuni. *Tel.*—Nalla-puru gudu. *Tam.*—Neerpoola. *Can.*—Sanna-kage-soppu. *Mal.*—Katu niruri. *Kon.*—Kakesappu) is met with generally on the East and West Coasts of India. The *root* and the *root-bark* are alterative and are given in the form of *decoction* in four-ounce doses twice daily or as *pill* made with other alteratives and aromatics. The drug is employed in the treatment of vesical affections. The *leaves* are employed as diuretic and cooling especially their *juice*; it is made into a *pill* with camphor and cubebs which is allowed to dissolve in the mouth in cases of bleeding from the gums.

715. **Phyllanthus Niruri** or **P. Urinaria** is a perennial herb of the same genus as above, (*Sans.*—Bahupatra; Bhumyamlaki; Bhuta-dhatri. *Hind.*—Jaramla; Niruri. *Fr.*—Phyllanthe niruri; Herbe due chagrin. *Ger.*—Weisse Blatt-blume. *Ben.*—Bhuiamla. *Bom.* & *Mah.*—Bhuiavala. *Tel.*—Nela usirika. *Tam.*—Kizhkay nelli. *Can.*—Kirunelli. *Mal.*—Kilanelli. *Kon.*—Bhuyavali) common in Central and Southern India, extending to Ceylon. The plant is considered de-obstruent, diuretic, astringent and cooling. A *decoction of the plant* is administered in jaundice; or half ounce rubbed up in a cup of milk is given morning and evening; or the *root* or the dried small bitter *leaves in powder*, are used in teaspoonful doses. The whole plant is employed

also in some forms of dropsy, gonorrhœa and other genito-urinary affections of a similar type. The young *tender shoots* are administered in the form of *infusion* for chronic dysentery. The *juice of the stem* mixed with oil is used in ophthalmia. The whole *plant* pounded with its root and combined with rice water is used as *poultice* for ulcers and swellings. A poultice of the leaves mixed with salt cures itch and other skin affections. A bitter neutral principle named "Phyllanthin" has been isolated from the plant. As a stomachic bitter it is useful in dyspepsia. The plant is said to be useful in diabetes.

716. Phyllanthus Oblongifolius (*Ger.*—Ovalblattrige Blattblume) is a species "the root-bark of which is a stomachic tonic. The root-bark, stem and branches together with leaves and fruits are used in baths for gout"—(Chakravarthy).

717. Phyllanthus Pedunculatus (*Ger.*—Langstielige Blattblume) is a Malabar shrub used as a pectoral. The *leaves* and *root* are applied in inflammatory swellings—(Chakravarthy).

718. Phyllanthus Restusus is a large tree, the *root* of which is astringent and is used together with the fruit and leaves as a pectoral—(Chakravarthy).

719. Phyllanthus Reticulatus (*Sans.*—Krishna-Kamboji. *Kon.*—Panpoye. *Ben.*—Pankushi. *Guz.*—Dotwan. *Hind.*—Panjoli. *Mal.*—Katunirure. *Mah.*—Pavana. *Sind.*—Kumohi. *Tam.*— Pulavayr; Karupu-pillanje. *Tel.*—Pulaguwa; Phulsar) is met with throughout tropical India. The leaves and bark contain tannic acid, gum and a crystalline principle. *Decoction of bark* (1 in 20) in doses of 1 to 2 fluid ounces or *infusion*

of leaves (1 in 10) in doses of 1 to 2 fluid ounces is used as astringent, diuretic and alterative. A *pill* made of its *leaf juice* mixed with camphor and cubebs is dissolved in the mouth as a remedy for spongy and bleeding gums. The *juice* is also reduced to a thin extract along with the juice of the other alterative plants and made into a pill with aromatics. This pill is given twice a day, rubbed down in milk as an alterative in "heat of the blood".

720 Phyllanthus Rhamnoides (*Sans.*—Aruni. *Hind.*—Surasaruni. *Oudh.*—Tikkari) is found throughout tropical India, from Oudh eastwards to Upper Assam and southwards to Travancore. The *dried leaves* are smoked like tobacco in cases in which uvula and tonsils are swelled. The *bark* is astringent.—(Dymock).

721 Phyllanthus Simplex (*Ger.*—Finfache Blattblume) is used in pruritus in children.—(Chakravarthy).

722. Phyllanthus Subaumifolius. (*Ger.*—Schuppenblattrige Blattblume) is a Cochin China species, the *fruits, flowers and leaves* of which are emollient and discutient.—(Chakravarthy).

723. Physalis Alkekenji (*Eng*—Strawberry tomato) of Solanaceae order is a native of Europe and United States. The fruits are available in Indian City-bazaars. The *straw berries* contain malic and citric acids, a volatile matter, sugar, mucilage, pectin, woody fibre and water. They are said to act on the liver and are diuretic and laxative, useful in strangury, stone and in kidney and urinary diseases; even diabetics are allowed to eat strawberries, for the sugar they contain is levulose and not hurtful. They are invaluable in fever-

ish conditions. Hoffman recommends them in haemoptysis and some authors have thought them useful in dropsy. Aldo Castellani & K. C. Browning (*B. M. Journal*, May 6, 1922) tried the uses of an *ethereal extract* of strawberries in 5 grain-doses given 3 or 4 times a day in cases of typical sprue in conjunction with the usual milk diet and alkaline treatment and found that it hastened the improvement of the general condition of the patients. The *leaves* are useful in gout. The *root* is astringent and used in diarrhoea. Dose of the berries is 5 to 6; of the succus 1 to 2 ounces; of the tincture 1 to 2 drachms. A *tea made of the leaves* checks dysentery. Linnaeus is said to have cured himself of gout by the use of this fruit. Strawberries are a remedy also for anaemia and rheumatism as they contain salicylic salts. They are found to be rich also in alkaline and mineral salts, in lime, and in phosphates. They contain 0·05 per cent of iron mingled with manganese and therefore easily assimilable so as to highly enrich the blood.

Physalis Flexuosa or P. Somnifera—See Withania Somnifera.

724. **Physalis Indica.** (*Eng.*—Winter Cherry. *Can.*—Bondula gida. *Mal.*—Ottampuli). The *fruit* is sometimes used in nephritis, dysuria, ascites etc. The *juice of the leaves* is administered in cases of colic due to worms in children.

725. **Physalis Minima** is a variety of P. Indica (*Sans.*—Tankari. *Eng.*—Cape gooseberry. *Can.*—Bandula. *Hind.*—Tulatipati. *Mah.*—Tanmori. *Tel.*—Kupante. *Ben.*—Bantipariya. *Punj.*—Kaknaj) is found in many parts of India. It is, in action, alterative, diuretic,

and aperient useful in dropsy, urinary diseases and gout. The *fruit* is said to infuse vigour in worn out system and to cure premature decay. A compound medicated *oil* containing P. Minima, Aplotaxes Auriculate, *Hing*' *Hirdan*, Long-pepper, black salt, *Saindhava*, Rock salt, *Javakhara*, Ginger, butter or ghee, is used as an application to the enlargement of the spleen.

Picrasma Excelsa—See Quassia Excelsa.

726. Picrasma Javanica is a species of Simarubeæ, of which the *bark* is exceedingly bitter, useful as a febrifuge instead of quinine. The bark contains a bitter principle allied to quassin and contains no tannin.

727. Picrasma Quassioides (*Sans.*—Charangi. *Hind.*—Bharingi. *Punj.*—Puthorin; Birgo. *Nepal.*—Shama baringi) is a plant found in subtropical Himalaya from Jammu to Nepal, Garhwal and Bootan. *Bark, wood and root* are quite as bitter as the quassia for which it would prove an excellent substitute. The *leaves* are applied to itch. The *wood* is found to contain a bitter crystalline probably the *quassin* of the true quassia, also a resin-like substance, a non-crystallizable, bitter, resinous body and a pungent, slightly bitter and acrid alkaloid.

728. Picrorrhiza Kurroa is a species of Scrophularineæ (*Sans.*—Katuka. *Vern.*—Katuki; Katukarohini) common on the Himalayas from Cashmere to Sikkim. The root contains a glucoside called "Picrorrhizin"; it is a soluble bitter substance with an acid reaction. The drug also contains other substances such as glucose, wax, cathartic acid etc. In action it is, in small doses a bitter stomachic and laxative and, in large doses, a cathartic. It is used in the form of tincture, extract or powder. Two

drachms of the *powdered root* given with sugar and warm water acts as a mild purgative. Ten to twenty grains of the powder with aromatics or drugs such as pepper, asafoetida, *triphala* and salts is useful in constipation due to scanty intestinal secretions. In bilious fever Chakradatta recommends a *compound decoction of Katuki* root, liquorice, raisins, *nim* bark, ½ tola each and water 32 tolas boiled down to its quarter ; and in dyspepsia with severe pains the same recommends a *compound powder of Katuki*, Acorus Calamus, Chebulic myrobalans and plumbago root in equal parts, given in doses of one drachm with cow's urine. The drug is useful in 10 to 20 grain doses as a tonic and in 40 to 50 grains as an antiperiodic. For worms in children it is given in combination with aromatics. This drug must be carefully distinguished from other drugs with the same vernacular name *e. g.* from *Kala kutki* (Black Hellebore). Recently it has been tried and found beneficial in several cases of ill defined fever, such as low fever with constipation, symptomatic fever of elephantiasis and fever of malarial origin which had resisted other home remedies.

729. **Pimpinella Anisum** is a well known herb of the genus Umbelliferae (*Sans.*—Shatapuspa; Madhurimisi; Karavee; Shatava. *Eng.*—Anise; Sweet fennel. *Fr.*—Anis. *Ger.*—Anis-Biberrell. *Hind.*—Saunf. *Arab.*—Anisun. *Ben.*—Muhuri; Mith-i-jira. *Bom.*—Ervados. *Tel.*—Kuppi; Sompu. *Tam.*—Sombu. *Can.*—Sapu-gida. *Pers.*—Badian) cultivated in Persia and in Northern India. The *seed-pods* from which anise seed is made, form a reliable remedy for dyspepsia. The *fruit* or *seed* is stimulant, carminative, slightly expectorant, used to

relieve flatulency, indigestion, colic in children and to diminish the griping of purgatives. The fruit yields an essential oil which is known as the oil of anise-seed and consists of anethol or anise camphor 80 p. c., anise aldehyde and methyl-chavicol. The *fruit* and essential oil are much valued as aromatic, stomachic and carminative. It allays griping of purgative medicines. The *oil* is a stimulant expectorant like all volatile oils. Locally the oil is applied to the head in headache and to the abdomen in flatulent colic. *Anise water—Arak Badian*—is also similarly useful and is an antispasmodic. The seed is chewed with betelnut and as a condiment. It is useful in bowel complaints as well as in bronchial catarrh, especially among children after the acute stage has passed away. Half a drachm of the seed with one drachm each of sugar and chebulic myrobalan in powder is a good laxative, and aniseed and caraway taken in equal quantities and parched form a nice digestive taken in teaspoonful doses after meals. Dose of the *powdered seeds* is from 10 to 30 grains; of the *infusion* or *distilled water* (1 in 80) is 1 to 2 ounces; of the *essential* oil.-4 to 20 drops on sugar.

Pinus Deodara—See Cedrus Deodara.

730. **Pinus Gerardiana** is a species of Coniferae (*Eng.*—Neozapine ; Edible pine. *Hind.*—Gunobar; Rhee ; Neoza. *Pers.*—Tukhm-i-sanobara. *Arab.*—Hubula Sanobara. *Punj.*—Mirri; Gogajal. *Guz. & Mah.*—Chilgozah; Galgoja) is met with in N. W. Himalaya and Afghanistan. The pine nuts contain albumnoids, starch, oil and ash. In action they are stimulant, nutritive, tonic and aphrodisiac like

badam, *pista*, *charoli*, etc, and used in the form of confection, in doses of 1 to 2 drachms, in chronic rheumatism, seminal debility, leucorrhoea and gleet.

731. Pinus Longifolia, (*Sans.*—Sarala; (oleo-resin) Sarala drava; Srivasa; Kshira. *Eng.*-The Long-leaved Pine. *Fr.*-Pin a longues feuilles. *Hind.*-Saral; Chirgond (oloe-resin). *Guz.* & *Duk.*—Gandha biroza. *Pers.*—(resin) Samaghe sanobara. *Nepal*—Salsel-dhup. *Tam.*—Shirsal. *Arab.*—Aalakus. *Cash.*—Chir) is common on the Himalayas, North-Western India from Afghanistan to Kashmir. The *wood* is aromatic, antiseptic, deodorant, stimulant, diaphoretic and refrigerant, useful to cool the burning sensation of the body, in cough, in fainting and as an application in ulcerations. It is generally used with other medicines. It yields on incision an *oleo-resin* or turpentine which contains a volatile oil called "pinene" with a small quantity of limonene; it is the source of the resin usually employed as a stimulating application for ulcers and abscesses, and as a basis for *plasters* and an ingredient in ointments; the plaster is used for painful chest and enlarged liver. The oleo-resin is used for fumigations. Internally the *oil* is used with success as a stimulant diuretic in gleet, long-standing gonorrhoea and in similar affections. In cases of gleet and urethral stricture Zad-Garib recommends a powder made of the equal parts of *Haldi* (Curcuma longa), *Sut Biroza*, *Dumbekh vain*, *Kundru* (Boswella Thurifera) and *Hub-Kakunuj* (goose berry) in doses of 1 *masha* (about 15 grains) three times a day. The purified oleo-resin might be given in doses of 1 to 2 drachms in emulsion. The *tar* is employed in chronic bronchitis and phthisis and is a favourite application in skin diseases.

732. **Pinus Pinea** or P. Sylvestris (*Eng.*--Fir tree; Pine. *Urdu.*--Sanaubar) is a cone-bearing tree, the *decoction of its wood* and *bark* is used medicinally and said to be useful for nose-bleeding and ruptures of the lungs. A *fumigation* is said to open and issue menses and to aid delivery. The *oil* distilled from the fresh leaves is a mild stimulant and useful in chronic laryngitis in the form of inhalation.—A mixture of 5 minims of the oil, 2½ grains of Magnesia Carbonas levis and a drachm of distilled water, put into a mixture of cold and boiling water half pint each for the inhalation.

Pinus Webbiana—See Abies Webbiana.

733. **Piper Album** (*Eng.*—White pepper) consists of fruits of P. Nigrum divested of the dark outer skin, which is removed by soaking in water, the berries being subsequently dried and bleached in the sun; the pungent and acid principles contained chiefly in the pericarp are thereby removed. Uses are the same as those of P. Nigrum. White pepper forms an ingredient of a pill reputed to be a specific for checking the constant attacks of filarial fever accompanying elephantoid swellings. It is known as *Hubbai Sahfa*. It is prepared thus :—Saturate white pepper and *bachnag* (Aconitum ferox) in milk for three days, changing the milk every day with fresh milk. Grind the drugs in ginger juice and make pills. Dose is 1 pill thrice a day.—(Indigenous Drugs Report, Madras).

734. **Piper Aurantiacum** (*Sans.*—Raṅuka. *Hind.*—Sambhalukabeej. *Ben.*—Renuk. *Bom.*—Kaunti. *Tam.*—Yetti) is a kind of creeper yielding a fragrant fruit resembling that of P. Nigrum. "It is bitter, acrid,

refrigerant, light, excitive of digestive fire, of memory, bilious, abortive and beneficial in phlegm, wind, thirst, burning, psoriasis and poison."—(N. N. Sen Gupta).

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735. PIPER BETLE; Chavica Betle.

(*N. O.*—PIPERACEAE.)

Sans.—Tambula; Nagavalli. *Eng.*—Betel-leaf Pepper. *Fr.*—Betel. *Ger.*—Betelpfeffer. *Hind., Ben., Punj., Gus., Mah. & Kon.*—Pan. *Pers.*—Tambol. *Tel.*—Naga-valli; Tamalapaku. *Tam.*—Vettilae. *Can.*—Villayadele. *Mal.*—Vettila. *Cing.*—Balat. *Burm.*—Kun-yoc *Malay.*—Seereh.

Habitat.—This twining plant is cultivated very extensively in the warm and moist parts of India for its leaves.

Parts Used.—The leaves.

Constituents.—The leaves yield on distillation a light aromatic and volatile oil containing betel-phenol (chavi betol). It can be isolated, and on being treated with caustic potash it yields chavicol, a phenol which is a powerful antiseptic, twice as strong as eugenol; to this is due the characteristic odour of the leaves and oil. The leaves contain also an alkaloid "arakene" with properties allied to cocaine. The betel oil contains also terpene, and sesque-terpene. According to Messrs. H.H. Mann, Sahasrabuddhe and V. G. Patwardhan of Poona the younger leaves on the plant contain much more essential oil, much more diastase and much more sugars than those which are older. On the other hand, the tannin does not vary in this direction. The leaves both on the middle branches and on the middle part of the main vine contain the largest quantity of tannin. As regards phenols, the

higher the quality of the leaf, the higher their proportion in the essential oil. The essential oil, however, is not always the same. It is the quantity and also the character of the essential oil which seems to determine the value of any leaf for chewing. The best essential oil is that which contains as large a proportion of phenols as possible. Those varieties of leaf which give an essential oil containing much terpene are very pungent and coarse.

Action.—Stimulant, carminative, astringent, aphrodisiac and antiseptic; the juice of the leaves and the oil are said to have also aromatic and astringent properties. The juice is a valuable stomachic and febrifuge in drachm-doses.

Uses.—The leaves are generally used for chewing, in the form of packets of the leaves made with the addition of lime, catechu and betel nuts. Those who can afford, add also cardamoms, nutmegs, cloves, camphor and other aromatics. They sweeten the breath, improve the voice and remove foetor from the mouth. Also they increase the salivary secretion. The betel leaves are generally chewed early in the morning, after meals and at bedtime A *liquid extract* of the betel leaves may be used in doses of 10 to 30 minims, in catarrhal inflammations of the throat, larynx and bronchi, also in cough, dyspnoea and indigestion so common in children. The *essential oil* of the leaves is also similary useful; besides it has an antiseptic action. Dr. Klienstruck of Zwatzen, near Jena has also used it in diphtheria as a gargle and by inhalation. The dose is one drop in 100 grammes of water. In India the juice of four leaves may be used similarly diluted. The *leaf juice* mixed with fresh ginger juice is used as a pectoral,

The warm leaves smeared with oil form a valuable application to the chest, in cases of bronchitis, difficulty of breathing and in coughs, especially those of infancy and childhood. The same application has been recommended in congestion and other affections of the liver. Instead of the leaves, a warm poultice consisting of 2 parts of the leaf-juice and 1 part of the hydrated slaked lime may be applied; it is a useful application also in sore-throat, laryngitis and bronchitis and over enlarged glands. The betel leaves warmed by the fire and placed in layers over the breast (the mammae) check the secretion of milk; thus employed they act also as resolvent to glandular swellings. The leaves may be applied as a dressing for blistered surfaces, as a substitute for oiled silk or gutta-percha tissue. The *juice* of the leaves is dropped into the ear to relieve earache, dropped into the eye for painful eye-affections. Internally the juice with honey or a liquid extract is useful in coughs, dyspnoea and indigestion, so common in childern. The leaf-juice is given with milk in hysteria. The leaves administred in the form of *syrup* with spices in doses of an ounce three times a day are useful in general debility and is esteemed as an aphrodisiac. The slender *roots* with black-pepper are used to produce sterility in women as they are said to produce paralysis and subsequent atrophy of the ovaries. The *root* is chewed by public singers to improve their voice. The tender *stalk of the leaf* dipped in castor oil is introduced into the rectum of the child suffering from simple constipation and tympanites. In cases of prolapsus ani, the patient is made to sit in a medicated bath made of *Babul-ki-phali*, betel leaves and gool-dhava (white jaggery) and a sufficiency of water.— (Ilaj-ul-Gurba).

736. **Piper Chaba, P. Officinarum,** is a plant of the genus Piperaceae (*Sans.*—Chavika. *Hind*—Chab; Gajphal. *Ben.*—Chair, *Bom.* & *Mah.*—Kankola; Chabchini.) native of the Indian Archipelago (Java and Sumatra). Its fruit is the long-pepper of European commerce and is imported into Calcutta via Singapore. The *fruit* is considered aromatic, stimulant and carminative occasionally used in medicine for coughs and throat affections, also in colic, tympanites and renal diseases.

Piper Cubeba—See Cubeba Officinalis.

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737. PIPER LONGUM; Chavica Roxburghii.

(*N. O.*—PIPERACEAE)

Sans.—Pippali; Trikana; Krishna. *Eng.*—The dried catkins; Long-pepper. *Hind, Bom.* & *Ben.*—Pipli. *Guz.*—Pipara. *Mah.*—Mothi; Pimpli. *Duk.*—Pipaliana. *Arab.*—Darfilfil. *Pers.*—Maghz-pipal. *Tel.*—Pippali katte. *Tam.*—Tippali. *Can.*—Hippali, *Kon.*—Hipli. *Cing.*—Tippli.

Habitat—This plant is indigenous to North-Eastern and Southern India and Ceylon and cultivated in Eastern Bengal for its fruit.

Parts Used.—The immature berries dried in the sun and the stems.

Constituents.—Resin, volatile oil, starch, gum, fatty oil, inorganic matter and an alkaloid, *Piperine* 1 to 2 p. c.

Action.—Stimulant, carminative and alterative tonic more powerful than black pepper ; also aphrodisiac, diuretic, vermifuge and emmenagogue. Externally rubefacient. The root is stimulant.

Uses.—Old long pepper is said to be more efficacious in medicine than fresh article—(U. C. Dutt). *Powdered long pepper* administered with honey is said to relieve cough, asthma, hoarseness and hiccup. For catarrh and hoarseness a mixture of long pepper, long pepper root, black pepper and ginger in equal parts is a useful combination. A compound powder consisting of the same ingredients and in equal parts and called *Chuturushana Churnam* is said to be useful in colic and flatulence besides coughs and coryza. It was recently tested and found successful. Dose is 10 to 60 grs. twice a day—(Ind. Drugs Report, Madras). For diseases of the Respiratory system Hakims use an extract prepared by boiling together 4 seers of Adhatoda leaves, 1 seer of white sugar, 16 tolas each of long pepper and ghee to the consistence of an extract and adding, when cool 1 seer of honey and mixing well. Dose is 1 to 2 tolas. A compound powder consisting of long pepper, ginger, black pepper, cinnamon and caraway in equal parts is a good expectorant ; and infusion made of 10 peppers with honey makes a good expectorant. A powder called *Sringyadi Churna* consisting of *Karkatashringi*, *atis*, long pepper and *Nagarmotha*, made into a linctus with honey is useful especially for coughs among children. In dry cough a *compound powder* made up of equal parts of long pepper, round zedoary, ginger, root of Clerodendron (Siphonanthus, *Karkatashringi*, and raisins, is a very useful remedy given in doses of 30 grains with honey or treacle. In catarrhal fever with difficulty of breathing, a powder made of equal parts of *Karkatashringi*, bark of Myrica Sapida (*Katphala*) and

long pepper is given in one drachm doses with honey. Unani physicians recommend a *pill* for asthma; it is made of filaments of Calotropis Gigentia 2 parts, long pepper and rock-salt 1 part each. The pills are of the size of a jangli *bor* ; the dose is one such pill thrice daily. For bronchitis a pill of the same size but made up of various other ingredients *viz.*—black pepper, long pepper, borax, *karkatashringi*, cloves, alum, *bharangi*, *harka chilka*, dry ginger and *nimak Lahori*, all equal parts is recommended in Ilaj-ul-Gurba. Two such pills to be taken at bed time. As a valuable alterative tonic in paraplegia, chronic cough, enlargements of the spleen and other abdominal viscera etc., it is used thus.—An *infusion of three long peppers* is taken with honey on the first day, then for ten successive days the dose is increased by 3 peppers every day, so that on the 10th. day the patient takes 30 at one dose. Then the dose is gradually reduced by 3 daily so as to finally omit the medicine. In rheumatism, roasted aments are beaten up with honey ; they are also given powdered with black pepper and rock salt (in the proportion of 2, 3, & 1 part respectively) in half tola doses for colic. A compound powder consisting of equal parts of long pepper, emblic and chebulic myrobalans and *Saindhava* salt, is a good digestive in doses of half to one drachm. In catarrh and bronchitis, a compound powder known as, *cough powder* is generally in use ; it is prepared thus.— Take of black pepper, *ajowan*, long pepper, rock salt black salt or common salt and borax each 1 tola and Adhatoda leaves 40 tolas ; put them all in a small pot, close the mouth carefully and put the pot over fire for

a while till the ingredients within are completely burnt. Use the burnt powder 2 to 6 grains mixed with honey. A fermented decoction called *Pippali Arista,* used in asthma, cough, anorexia, piles, etc., is composed of long pepper, *lodhra,* black pepper, grapes and Cissampelos pareira. Dose is ½ to 2 tolas twice a day. With black pepper, long pepper is used in the preparation of irritating snuffs for using in coma and drowsiness. *e. g.,* take of black pepper, long pepper, seeds of Moringa Pterygosperma and ginger equal parts, powder the ingredients and rub them together with the juice of the root of Agati Grandiflora. This preparation is used as a snuff in coma and drowsiness. For indigestion, chronic and painful dyspepsia, dilatation of the stomach and chronic gastritis, a compound powder known as *Bhaskara Lavanam* is much in use; it is made up of.—long pepper, root of long pepper, coriander, nigella seeds, *induppu* (a variety of rock salt), *Vitlavana*, Cinnamon leaves, *talispatri*, *nagkesari*, 2 palams each; pepper, omum, dry ginger and *amlavadasa* (Rumex Vasicarius) 1 palam each; cinnamon and cardamom seeds 6½ palams each; pomegranate fruit-rind 4 palams, black salt 5 palams and *Kalluppu* (a variety of rock *salt*) 8 palams all well powdered, mixed and sifted through cloth, the dose ½ to 1½ drs, twice a day before food. Another powder generally taken along with this, in cases of dyspepsia, and containing 8 ingredients and called *Ashta Churnam* is made of equal quantities of black pepper, long pepper, dry ginger, omum, *Saindhava* salt, cumin seeds, nigella seeds and asafoetida. Dose is 20 to 40 grains twice or thrice a day before meals—(Indigenous

Drugs Réport, Madras). A compound powder of 5 pungents named *Pancha Kola Churnam* and consisting of long pepper, long pepper root, dry ginger, stem of pepper plant and *chitraka* is said to be a good appetiser useful in dyspepsia, cough, flatulence and enlarged spleen. This was recently tried and found efficient. Dose is 10 to 30 grains twice a day.--(Ind. Drugs Report, Madras). As rubefacient, oil containing it and ginger is applied in sciatica and paraplegia, as for instance the *Astakatvara Taila* recommended by Chakradatta, which consists of ginger and long pepper each 16 tolas, mustard oil 4 seers, butter milk 32 seers, curdled milk 4 seers, boiled together inthe usual way. This oil is rubbed externally in sciatica and paraplegia. Both the *fruit and the root* are much prescribed in palsy, gout, rheumatism, lumbago, etc. The fruit is given to women after parturition to check haemorhage and to ward off fever. As vermifuge it is one of the best remedies for colic in children. The fruit is used to some extent as a spice. The root is much used as a stimulant remedy and spice.

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738. PIPER NIGRUM.

(*N. O*—PIPERACEAE)

(*Sans.*—Maricham. *Eng.*—Black pepper. *Fr.*—Poivre. *Ger.*—Schwartze pfeffer. *Hind. Punj. Duk.* & *Ben.*—Kali-mirich; Gol-mirich; Habush. *Cash.*—Martz. *Ben.*—Vellajung. *Bom.* & *Mah.*—Kala-miri. *Kon.*—Miri. *Guz.*—Kalomirich. *Tel.*—Miryalu. *Tam.*—Milagu. *Can.*—Volle-menasu. *Mal.*—Kuru-mulaka. *Cing.*—Kalu-miris. *Burm.*—Nayukon. *Malay.*—Ladahitam.

Habitat.—This perennial, climbing shrub is indigenous to Malabar and Travancore coasts.

Parts Used—The dried unripe fruit—the black pepper.

Constituents—A volatile alkaloid *Piperine* 5 to 9 p.c., *piperidin* 5 p.c, a balsamic volatile oil 1 to 2 p.c., fat 7 p.c; masocarp contains *chavicin*, a balsamic volatile oil, starch, lignin, gum, fat 1 p.c., proteids 7 p.c. and ash containing organic matter 5 p. c. Chavicin is a soluble pungent concrete resin; it contains very little piperine and no volatile oil. Piperine crystallizes in flat, four-sided glassy prisms insoluble in water.

Action.—Black pepper is acrid, pungent, hot, carminative, also used as antiperiodic. Externally it is rubefacient, stimulant to the skin, and resolvent. On the mucous membrane of the urethra it acts like cubebs. Piperine is a mild antipyretic and antiperiodic.

Uses—The use of black-pepper as a culinary spice is well-known throughout the world. Medicinally also it is important being used in combination with long pepper and ginger under the name of *trikatu* or the three acrids. A compound salt reputed to be a specific for all forms of dyspepsia and known as *Kalyanaksharam* is composed of; *trikatu*, the three myrobalans, *saindhava*, *vit* and black salts, marking nut, *Chitramula* *Dhante* (Baliospermum Montanum), castor oil, cow's urine and ghee, all equal parts; grind them in cow's urine, place the paste in a new pot, cover with a *chatty* and close with cloth dipped in clay; then heat it. Dose is ½ to 1 drachm thrice a day in ghee or castor oil before meals. It is used in constipation, piles, colic, gastric troubles, ascites, anaemia worms, asthma etc. A preparation popular among Unani physicians and called *Jawarishai Thurush* used in in-

digestion and want of acidity in the stomach consists of pepper, ginger, embelia ribes, black salt, rock salt, sodium chloride 1 palam each, Mentha Sativae (green *Pudina*) 2 palams, powdered and mixed with the juice of 10 lemons. Dose is ¼ to ½ tola twice a day. Black pepper is useful in dyspepsia and flatulence, in doses of 10 to 15 grains of the powder and, in haemorrhoids, in the the form of *confection*. The following is an example —*Pranada Gudika*:—Take of black-pepper 32 tolas, ginger 24 tolas, long pepper 16 tolas, Piper Chaba 8 tolas, leaves of Abies Webbiana 8 tolas, flowers of Mesua Ferrea 4 tolas, long pepper root 16 tolas, leaves called *tejapatra* and cinnamon 1 tola each, cardamoms and the root of Andropogon Muricatus 2 tolas each, old treacle 240 tolas; rub them together. Dose is about 2 drs. This confection is given in haemorrhoids. When there is costiveness and a sense of heat, chebulic myrobalan is substituted for the ginger in the above prescription. Black pepper is occasionally employed as antiperiodic in obstinate fevers either alone or with other drugs preferably quinine. With calumba and bismuth it is used in dyspepsia and with asafoetida and camphor in flatulency. It is largely used in cholera pills. It is a useful ingredient in tooth powder. In ILAJ-UL-GURBA, a pill is recommended for syphilis; it is made by taking black pepper 2 drachms, root of Calotropis Gigentia 3¾ drachms and jaggery sufficient quantity to make a pill mass and dividing it and making pills of the size of millets. Dose is one such pill twice daily. Externally it is applied to boils in the form of a paste; also in cases of relaxed sore-throat, piles, alopecia and other skin diseases. Strong

friction with pepper, onions and salt is said to make the hair grow again upon the bald patches left by ringworm of the scalp.—(Dymock). Finely powdered black pepper and sesame oil well mixed and heated over a mild fire form an efficient application over the affected parts in cases of paralysis.

In cholera the following *pills* were formerly held in high repute in Bengal:—Take of black pepper, asafoetida and opium, each 20 grs; beat them well together and divide into 12 pills; of these one was the dose, repeated in an hour if required. On account of the opium they contain they should not be continued too long. They are chiefly indicated at the very outset of the attack. For diarrhoea pills containing the same ingredients but in different proportions *viz.*, 2, 1, and $\frac{1}{4}$ gr. respectively in each pill, are useful. A *compound powder* consisting of pepper, ginger, long pepper, caraway and rock salt in equal parts, is a nice digestive after food in doses of $\frac{1}{2}$ to 1 drachm. For piles in aged and debilitated persons a *confection* made of black pepper powder 1 ounce; caraway powder $1\frac{1}{2}$ ounce and honey $7\frac{1}{2}$ ounces, is useful in doses of from one to two drachms twice or thrice daily. It proves useful also in cases of old and weak people suffering from descent of the rectum. For jaundice, ILAJ-UL-GURBA recommends a preparation made up of equal parts of black pepper and *Kasunda* leaves (Cassia Occidentalis) pounded well and mixed with some water; it is to be prepared and taken twice daily. the same recommends a preparation for local application in night-blindness; it is prepared out of black pepper, long pepper and *Kamila*, all in equal parts. An *infusion* of black pepper (1 in 80) forms a use-

ful stimulant gargle in relaxed sore-throat and hoarseness dependent thereon and in toothache also. *Piperine* is given with much benefit in ague, gonorrhoea, haemorrhoids etc., in doses of 3 to 10 grains. In intermittent fever black pepper, in doses of about a drachm is recommended to be given with the juice of the leaves of Ocimum Sanctum or Leucas linifolia (*drona pushpi*):-(Bhavaprakash). In obstinate intermittent fever and flatulent dyspepsia, 4 drachms of black pepper is boiled overnight in one seer of water until reduced to its quarter, then allowed to cool during the night and taken in the morning. Another dose prepared afresh similarly is taken at night. This treatment is continued for seven successive days.

739. Piper Trioicum (*Eng.*—Canerese Pepper; Abortive Pepper-corns. *Hind.* & *Mah* Pokala-miri. *Tel.*—Murial tiga) is met with in South India. It is pungent, stomachic, carminative and stimulant; used as paste and powder like *Kala-miri*. They are used to relieve toothache and as an internal remedy for cholera.

740. **Pisonia Aculiata** of the genus Nictagineae (*Ben.*—Baghachura. *Uriya.*—Hati-ankusa. *Tam.*—Karu-indu. *Tel.*—Kunki-pootri; Embudichettu) is found in South Concan and elsewhere in the Deccan. The bark and the leaves are used as a counter-irritant for swellings and rheumatic pains. The juice mixed with pepper and other ingredients is given to children suffering from pulmonary complaints.—(Watt).

741 **Pisonia Alba;** P. Morindifolia of the same genus (*Bom.*—Chinaisalita) is cultivated in; India. The fresh leaves moistened with Eau-de-Cologne are used as

varalians to subdue inflammation of an elephantoid nature in legs and other parts.—(S. Arjun).

Pistacia Integerrima—See Rhus Succedania.

742. Pistacia Lentiscus is a tree of the genus Anacardiaceae (*Eng.*—The Mastiche Tree. *Hind. Ben. Mah.* & *Guz.*—(resin) Rumi Mastaki. *Pers.*—Kundari or Sakir rumi) growing in the countries bordering on the Mediterranean; its resin called the mastiche and obtained by incisions made in the bark, is imported into India from Asia Minor through Persia and Afghanistan. The *leaves* contain a colouring matter and tannin. The fruit contains bimalate of lime. The *leaves in infusion* or *decoction* (1 in 10) in doses of ½ to 1 ounce, or as *liquid extract* in ½ to 1 drachm doses are used. *Paste* of leaves is also employed in medicine. The mastiche besides being employed in the manufacture of varnish, is used as a masticatory in tooth affections. It is used by dentists for filling carious teeth. A solution of 2 parts of mastiche gum dissolved in 1 of either chloroform or ether and applied on cotton wool; it remains as a firm plug after evaporation of the solvent. It has the effect of preserving the teeth and sweetening the breath, when used as a tooth-paste. It forms an ingredient in stimulating tinctures applied to the mouth and gums, such as the compound tincture of Ammoniacum. Mastiche is reputed to be stimulant and diuretic and is frequently prescribed with aloes etc., in *dinner pills*:—*e. g.* Mastiche and Extract of Socotrine aloes each 1 grain and extract of Belladonna ¼ grain. Dose is one such pill with dinner each night. It contains a trace of volatile oil, two resins:—*Alpha* resin or mastichic acid 90 p. c., and *Beta* resin or mastichine 10 p. c.;

also an ethereal oil. Mastichine is a mild stimulant and diuretic used in catarrhs of the respiratory and urinary passages. It is given combined with salep in general or genital debility as an aphrodisiac. The gum mastiche is applied as a *paste* to the chest in catarrh, bronchitis and to relieve local pain. Its solution in alcohol is a useful styptic to arrest bleeding from leech bites. The *galls* have an acid and astringent property. They are used in emulsion in cough mixtures. As an astringent they are kept in the mouth in sore mouth. They are useful application for the cure of aphthae on the tongue. The following are very useful simple remedies:—(1) Take of Mastiche gum 4, Cubebs 5; mace 4, nutmeg seeds 3, cloves 3, benzoin 2, *Mashka dana* 3, and honey 6 parts. Mix and make a pill mass. To be kept in the mouth. Used to remove fœted odour. (2) Take of Mastiche gum 4, black pepper 4, dry ginger 3, Aplotaxis auriculata 4, sulphate of copper 2, coriander 5, cumin seeds 5, chloride of sodium 4 and sulphate of iron 2 parts. Mix, make a paste and apply; used in tooth-ache. (3) Take of mastiche gum 2, Hygrophila Spinosa 2, seeds of horse-radish 2, Corchorus Humilis (*Bahuphali*) 5, sugar 10, common cucumber seeds and water melon seeds each 2 parts. Mix and make a powder. Dose is 10 grains; used in gonorrhoea. (4) Take of mastiche gum 1, cubebs 2, bamboo manna 1 and cardamoms 1 part. Mix and make a powder. Dose is grains 5 to 25; used in leucorrhoea. A compound powder consisting of mastiche and a number of other ingredients is prescribed in seminal weakness and impotence with constipation and sluggish liver.

743. Pistacia Terebinthus *Var.* **P. Mutica;**

P. Cabulica; P. Khinjuk is a species of Anacardiaceæ (*Eng.*—The Terebinth or Chian Turpentine tree; (the resin) Bombay or East Indian Mastiche. *Hind.*—Mastaki; Kabuli Mastaki; khinjak. (Galls). *Pers.* & *Hind.*—Guli-Pistah. *Bom.*—Buzaganja) are small trees of Baluchistan and Afghanistan. The three varieties of this tree yield oleo-resins allied more or less to that of true mastiche and used in India as substitutes for it. The uses etc., are similar to the above. The oleo-resin of P. Terebinthus is recommended in the treatment of cancer; dose is 5 to 10 grains.

744. **Pistacia Vera** is a tree of the same genus (*Eng.*—The Pistachio-nut tree. *Hind.* & *Ben.*—Pista. *Pers.*—Pisteh (galls). *Bom. Pers.* & *Hind.*—Guli Pista; Buzaganja) growing in the forests of Syria and Persia and cultivated in Afghanistan. The fruit or nuts are brought to India by the Kabul traders along with asafoetida and other drugs. The pistachio nuts are used as food and regarded as very wholesome and nourishing. They are sweet and agreeable. They enter into the composition of certain *confections*, and are used for flavouring ices and creams. They yield an *oil* by expression which is used for making an electuary for diseases of the stomach. The *fruit* somewhat resembles that of the olive, ovoid and reddish externally, astringent and terebinthinate, with a kernel which yields a sweet, aromatic oil. *Galls* are formed on the leaves, which contain 45 p. c. of tannin allied to gallo-tannic acid, besides gallic acid and 7 p. c. of a resin or oleo-resin to which their odour is due. They are also imported into India. Medicinally the nut

has been regarded as tonic and useful in debility. The oil expressed from it is used as a demulcent. The galls are useful as astringent.

745. **Pistia Stratiotes** is an aquatic, stemless plant of the genus Ariodeae (*Sans.*—Kumbhika; Bari-parni, *Eng.*—Tropical Duckweed. *Ger.*—Schwimmende Muschelblume. *Hind.*—Jal-kunbhi. *Ben.*—Takapana. *Bom.*—Prashni. *Tel.*—Antara tamara. *Tam.*—Agasa-tamare) growing on the surface of the water in tanks and stagnant pools in Bengal and is also found on the sea shore. The plant contains salts of potassium, sodium, magnesium and lime; also iron, aluminium and silicic acid. The ash of the plant consists chiefly of potassium chloride and sulphate. The *plant* is reputed to be an effectual bug destroyer; the plant is placed close to the wall on the floor and its smell apparently has the effect of enticing the bug to it and then of throwing the bug into a state of torpor from which nothing will arouse it. This method was successfully tried in Tanjore Jail which had been infested with bugs. (Capt. W. A. Swanston). The leaves are demulcent and refrigerant and the root emollient and laxative. They are used in dysuria and as an expectorant. The leaves mixed with rice and cocoanut milk are given in dysentery, and with rose water and sugar in cough and asthma. The root is laxative and emollient.—(Rheed & Ainslie). The ash of the plant known as pana salt, has some repute as an application for ringworm.

746. **Pisum Arvense** is a leguminous plant (*Sans.* & *Ben.*—Kalaya. *Eng.*—Field Pea. *Fr.*—Pois de champs) indigenous to western Asia, now extensively cultivated in India as a food supply.

747. Pisum Sativum. (*Sans.*—Saheela; Vart-tula. *Eng.*—Garden Pea. *Ben.*—Matar. *Hind.*—Kerav. *Tel.*—Peddaib) is a kind of pulse grown in all warm regions of India, espscially in Bengal and U. P. Its seeds are sweet, farinaceous and edible. The pulse is nutritious, refrigerant, appetiser, "generative of wind (*vata*) and alleviative of bile (*pitta*), phlegm (*kaffa*) and burning of the skin. Its soup is light to digest, refrigerant, astringent, and beneficial in diseases of blood, phlegm and vitiated bile".—(N. N. Sen Gupta).

Pithecolobium Bigeminum.—See Mimosa Lucida.

748. Pittosporum Floribundum or P. Ceylonicum or Celastrus Verticillata is a small tree of the genus Pittosporea (*Nepal.*—Tibilti. *Lepcha.*—Bongzam. *Bom.* Yekdi. *Mah.*—Vikhari found in Subtropical Himalaya from Sikkim to Garhwal, Western Peninsula, Concan to the Nilgiris. It contains a bitter glucoside *Pittosporin* and an aromatic oleo-resin. The *bark* is bitter and aromatic and is said to possess narcotic properties. It is used in doses of 5 to 10 grains, and as a febrifuge and in doses of 50 grains it is said to be a specific for snake poisoning. In the form of *decoction* (1 in 10) also it may be used. The *oil* is alterative, tonic and a local stimulant and said to have a specific effect on certain skin diseases It has been recommended for trial as a local application in rheumatism, leprosy, sprains and bruises. sciatica, chest affections and phthisis, ophthalmia and various forms of skin diseases. Internally it may be prescribed in doses of 15 minims to 2 drachms, in cases of leprosy and other cutaneous

diseases, secondary syphilis and chronic rheumatism. It must, however, be employed with caution, as in certain cases it is said to act as a gastro-intestinal irritant, producing vomiting and purging.—(Watt).

Pladera Decussata—See Canscora Decussata.

749. **Plantago Amplexicaulis** (*Punj.*—Gajpipali; Spighwall) is found in the Punjab plains from Sutlej westwards, Malwa and Sindh. It is said to be astringent, useful in intermittent fever and as an application to the eyes in ophthalmia; also as an antidote for snake-bite; highly valuable in pulmonary affections.—(Ainslie).

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750. PLANTAGO ISPAGULA; P. Ovata.

(*N. O.*—PLANTAGINEAE.)

Sans.—Snigdhajeera. *Eng.*—Ispaghul or Spogel seeds. *Pers.*—Baje-i-katuna. *Ben. Pers. Hind. Duk. Punj. Bom.* & *Mah.*—Isapghol. *Guz.*—Uthamujeerun. *Cash.*—Is-mogul, *Tel.*—Isapagalavittulu. *Tam.*—Ishappukolvirai. *Can.*—Issabagolu.

Habitat.—This Persian herb is found also in North-West India, the Punjab and Sind; cultivated to a small extent in Bengal.

Parts Used—The seeds.

Constituents.—Mucilage, fixed oil and albuminous matter.

Action.—Demulcent, mildly astringent, emollient and diuretic.

Uses.—Ispaghul seeds are cooling and used in catarrh, dysentery, blenorrhoea and affections of the kidneys. Dose is ½ to 2 drachms in powder, sometimes mixed with sugar or (better) in decoction (1 in 40) which forms

a cooling demulcent drink. Spoonful doses of the whole seeds steeped for 15 to 20 minutes in water and rendered mucilaginous are recommended by Dr. C. H. Jouburt in chronic dysentery. The seeds are also given in the water of tender cocoanuts. A drachm of the seeds powdered with half a drachm each of aniseed and sugar, is a good remedy for dysentery. A *powder* made of a drachm of the seeds mixed with five grains of the powdered ***Kurchi*** seeds is also a useful remedy for that disease. For gonorrhoea, a drachm of the powdered Ispaghul seeds with 10 grains of potassium nitrate and 15 grains of cubeb-powder is a nice remedy.—(Birdwood). The seeds were recently tested in Madras; they "were given in the form of an *infusion* in cases of specific urethritis and found to relieve considerably the burning and irritation accompanying the disease"—(Report on Indigenous Drugs, Madras). Steeped or boiled in water Isphagul seeds yield their bland mucilage to water and render it mucilaginous. The decoction is very beneficial in gonorrhoea, dysentery and diarrhoea, in gastritis, gastric and duodenal ulcers and in many affections of the kidneys and the bladder such as cystitis etc., and as a demulcent in coughs and colds and other pharyngeal disorders, particularly for children. In cases of dysentery (slimy) a tola each of the seeds and sugarcandy well mixed together, is taken 2 to 4 times a day. For bleeding, "body-heat", syphilitic taints etc., two to four tolas of the seeds kept soaked in water during the night, rubbed well next morning and mixed with two tolas of sugarcandy is a nice drink taken daily in the mornings. In the chronic diarrhoea of Europeans long resident in India, 2½ drachms of the seeds mixed

with half a drachm of powdered sugarcandy is an excellent remedy; or a drachm or two of the seeds are steeped in water for about 15 or 20 minutes and then given in spoonful doses of the whole seed. Many of the seeds pass out with the motions in a swollen state as they absorb much fluid in their passage through the intestines to which they give out an amount of bland mucilage, which has a healing action upon intestinal ulcers. If the whole seeds cause, on the other hand, intestinal-irritation, a *conjee* made like arrow-root *conjee* containing the mucilaginous shell of the seeds and popularly known as "*Isaphgul-ka-chilka*" may be administered frequently in teaspoonful doses to make up a large breakfast-cupful of the *chilka*. Dose of the *chilka* is one teaspoonful in two ounces of warm water. It is said that some degree of astringency and tonic property may be imparted to the seeds by exposing them to a moderate degree of heat so that they shall be dried and slightly browned. This remedy cures the protracted diarrhoea of European and Indian children, after many remedies have failed.—(Waring). The following powder is used with much benefit in dysentery and chronic diarrhoea:—Take of Isaphghul seeds, Ocimum Pilosum, *Tukhm-i-maro*, and Plantago Psyllium, each 1 drachm. Heat the whole over a fire; when cool make a powder. Dose is 1 to 2 ozs. to be taken with a little sugar. *Jauhar Hikamat* recommends for dysentery a preparation made of the mucilage of Isphagul seeds and seeds of Pyrus Cydonia in equal parts and double their quantity of sugar-candy, to be taken several times during the day. In many affections of the kidneys and bladder, in gonorrhoea etc.

attended with pain, local irritation and scalding or difficulty in passing urine, in piles etc., a strained decoction of the bruised seeds (1 in 80) is given in 2 to 4-ounce doses three or four times a day or oftener. Or it may be administered as *sherbet* prepared with sugarcandy, either alone or combined with alkalies and diuretics. Combined with ipecac it is administered in dysentery; with cubebs and nitrate of potash in gonorrhoea. A drachm or two of the seeds kept soaked in an ounce of water, which is then strained and mixed with almond oil and sugar, and taken in a single dose acts as a mild purgative. Isphagal deprived of its bland mucilage by keeping it soaked in water and strained, mixed with *bedana*, curds and rose water is a remedy for poisoning by arsenic. In rheumatic and gouty affections, swellings etc., and in irritable surfaces of the skin or mucous membrane the crushed seeds moistened with water form a good, soothing and emolient poultice; for the former a *poultice* of the bruised seeds made with vinegar and sweet oil is preferable. The *mucilage* of the seeds forms a cooling lotion for the head in ardent fevers.

751. Plantago Lanceolata (*Hind.*—Baltanga. *Ben.*—Bartung. *Pushtu.*—Purhar; Pangi. *Cash.*—Isabgool; Gola) is met with on western Himalayas from Cashmere to Simla, the salt range and Waziristan. The *leaves* are used as an application to wounds, inflamed surfaces and sores. The *seeds* are used with sugar as a drastic purgative; said to act as a haemostatic also.

752. Plantago Major or P. Psyllium or P. Asiatica (*Arab.*—Lasana-el-hamala. *Hind.*—Luhuriza. *Eng.*—Cart track plant; Way bread. *Ind. Bazaar.*—Bartang. *Pers.*—

Tukhm-i-baratunga) is found in temperate India.—Punjab, Cashmere to Bhutan, Assam, Khasia Hills, Bombay and Nilgiris. The seeds contain chlorophyll, resin, wax, albumen, pectin, sugar, and a large quantity of mucilage. A *cold infusion* (1 in 5) in doses of 2 to 4 fluid ounces is demulcent ; it is used like Ispaghula with cardamoms and sugar-candy and given in urinary disorders and dysentery. Also used in arresting fluxes and griping pain in the bowels.

Plectranthus Strobiliteros.—See Anisochilus Carnosus.

753. Plesmomum Margoritiform or Arum Margoritiform of the genus Aroideae (*Goa* :—Azomut) found in Bengal (Serampore-Decca), Goa and U. P. Its tuberous herbs 6 inches or less are bulbiferous all over. The country people in Goa used the crushed seed to cure toothache ; a small quantity is placed in the hollow tooth and covered with cotton, it rapidly benumbs the nerve ; they also use it as an external application to bruises on account of its benumbing effect.—(Dymock).

Pluchea Indica—See Gymnima Balsamicum.

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754 PLUMBAGO ROSEA.

(*N. O.*—Plumbagineae.)

Sans.—Raktachitraka; Usana. *Eng.*—Rose-coloured Leadwort. *Fr.*—Dentilaire rose. *Ger.*—Rosenrothe Bleiwurz. *Hind.* & *Mah.*—Lal-chitarak. *Ben.*—Lalchita. *Duk.*—Rakto-chita. *Cash.*—Shitrapunj. *Kon.*—Tambdi chitraka. *Tel.*—Yerra-chitramulam. *Tam.*—Shivappu Chittramulam. *Can.*—Kempu Chitramula. *Mal.*—Chekkikotuveri. *Cing.*—Ratnitul. *Burm.*—Kin-khenni. *Malay.*—Chitrakamerah.

Habitat.—This plant is commonly cultivated in gardens throughout India.

Parts Used.—The root.

Constituents.—The root contains an acrid crystalline principle called '*Plumbagin*' slightly soluble in boiling water, freely in alcohol and ether ; partly volatilizes when heated.

Action.—Alterative, gastric stimulant ; in large doses it is acro-narcotic poison. Locally it is vasicant. It has a specific action on the uterus. The scraped root of P. Rose is introduced into the mouth of the womb for the purpose of procuring abortion.

Uses.—The *bruised root* mixed with oil or in the form of liniment is used as a rubefacient application in rheumatism in enlarged glands, buboes etc. ; it cures certain cases of leucoderma.—(Dr. R. Gray). It is employed to procure criminal abortion ; it will expel the foetus from the womb whether dead or alive. A tincture of the root is used in secondary syphilis, in leprosy, and also in dyspepsia, piles, flatulence, loss of appetite and other digestive complaints. It is a good remedy to check *post partum* haemorrhage.—(Dr. Bhattacharjee). But this should be used with care and in suitable *i. e.*, moderate doses, *viz.*, 5 to 20 minims. Externally the root and the root-bark enter into the composition of caustic pastes and rubefacient applications. The bruised root tempered with a little bland oil is used as an application in rheumatic and paralytic affections. The *root* and *root-bark* are used as a substitute for cantharides for raising blisters. The fresh root-bark is rubbed into a paste with water and a little rice-flour ;

it is then spread on a piece of rag applied to the surface and kept for about half an hour and then a rice-poultice is applied over the part; in about 12 to 18 hours a large uniform blister will be found to have formed. The chief objection to the use of plumbago blister is the great pain it causes, hence it should only be used when other blistering agents are not at hand and a blister is an immediate necessity. In rheumatism the blistering paste should be removed after 15 to 20 minutes.

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755. PLUMBAGO ZEYLANICA.

(*N. O.*—PLUMBAGINEÆ.)

Sans.—Chitraka. *Eng.*—Ceylon Leadwort; White Leadwort. *Fr.*—Dentelaire de Ceylon. *Ger.*—Ceylonische Bleiwurz. *Hind. & Ben.*—Chitra. *Guz. Mah. Duk. & Kon.*—Chitramula. *Tel.*—Agnimatha; Chitra-mulamu. *Tam.*—Chittira. *Mal.*—Vellakotu-veri. *Can.*—Bile chitramula.

Habitat.—This plant is growing wild in Bengal, Southern India and Ceylon.

Parts Used.—The root.

Constituents.—The same ss those of P. Rosea and with same properties.

Action.—Similar to that of P. Rosea. The root is said to increase the digestive power and promote the appetite.

Uses.—The *root* of this drug also is powerfully poisonous and its internal use is said to be attended with great danger. It enters into the composition of several Indian preparations used as caustics. The root reduced to a *paste* is applied to abscesses with the object of opening them. With milk, vinegar, or salt and water the paste

may be applied in leprosy and other obstinate skin diseases, unhealthy ulcers, scabies etc. The *milky juice* is also useful application. Externally as caustic, it is used thus:—Take of plumbago root, root of Baliospermum Montanum, the milky juice of Euphorbia nerifolia and of Calotropis Procera or Hamiltonia (*arka*), marking nut, sulphate of iron, treacle and rock salt, equal parts; mix them together and make into a paste. In Vaidya Shastras the root is said to be useful in dyspepsia, piles, anasarca, diarrhoea, skin diseases &c. A *tincture of the root-bark* is employed as an antiperiodic. A favourite medicine for flatulence is a powder called *Shaddharana Yoga* recommended by Susruta; it is composed of equal parts of Plumbago root, *Indrayava* seeds, root of Stephania Hernandifolia, of Picrorrhiza Kurroa, *atis*, and chebulic myrobalan. The dose is about a drachm. In the Concan the following formula is used.—*Chitraka* root, embellic myrobalans, small black myrobalans (*Bal-harataki*), long pepper, long pepper root, rhubarb and rock salt. Powder and give 6 *mashas* (about a drachm) with hot water every night at bed time in flatulence with rheumatic pains.—(Dymock). For dyspepsia, Chakradatta recommends a powder made of equal parts of Plumbago root, rock salt, chebulic myrobalan and long-pepper; the dose is about 40 grains. The root is used generally as a stimulant adjunct to other preparations in the form of a combination called *trimada* consisting of Plumbago root, baberang seeds and the tubers of Cyperus Rotundus. Hakims use it in rheumatism and enlargement of the spleen. The root is said to have a beneficial effect on piles; in these cases it is

given in various combinations ; *e. g.*, an earthen jar or pot of which the inside is lined with a paste of the root is used for preparing curds (*dadhi* or *Kanjica*) which is given to persons suffering from haemorrhoids and prurigo. The root is said to have been employed in the treatment of intermittent fevers by Dr. Oswald. It acts as a powerful sudorific—(Dymock). For chronic and muscular rheumatism and all painful affections of the joints, pills or powder called *Chithra Kathi* are recommended. They are prepared thus:—Take in equal parts of each of the root of P. Zeylanica, the root of Pipper longum, crude sodium carbonate or Barilla, the five salts, *viz.*,—common salt, *Saindhava*, Vit salt, black salt and *Kacha lavanum*; dry ginger, long pepper black pepper, asafoetida, omum and Piper chaba. Powder them all and use as powder; or grind with lime juice and make pills of 5 grains each. Dose:—of the powder 15 grains or 3 pills three times a day. For epilepsy, hysteria, mania and other mental disorders a compound powder composed of *Chitraka* root, *Brahmi* and Acorus Calamus is said to be useful in doses of 10 to 30 grains three times a day.—(Indigenons Drugs Report, Madras). For paraplegia, pills popularly known as *Yogaraj Guggula* are recommended. They are composed of:—roots of P. Zeylanicum and Piper Longum, seeds of Ptychotis Ajowan, Nigella Sativum, Embelia ribes, Chidium diffusum and Cuminum, Pinus deodara Piper Chaba, Cardamoms, *Saindhava* salt, Aplotaxis auriculata. Vanda Roxburghii, Tribulus terrestris, Coriander seeds, the three myrobalans, tubers of Cyperus Rotundus, the three acrids, Cinnamomum

Zeylanicum, roots of Andropogon Muricatus, Carbonate of potash, Abies Webbiana and leaves of Cinnamomum Tamala, all in equal parts; pound and mix them together. Take also purified Balsamodendron Mukul equal to the combined measure of all the above ingredients. First pound it with ghee and add powders previously made and pound them again with ghee and convert into pills of 6 grains each. Dose is 1 to 4 pills. As alterative and tonic useful in nervous and rheumatic affections and in reducing obesity, a compound pill of Bdellium, Plumbago zeylanicum, *Trikatu* and *Triphala*, and known as *Dasanga Guggula* is recommended. Dose is 1 to 4 pills of 6 grains each, three times a day.

756. **Plumeria Acuminata**; P. Alba; P. Acutifolia, a species of the genus Apocynaceae (*Sans.*—Kshira-Champaka. *Hind.*—Gulchin. *Tel.*—Adavi-ganneru. *Guz.*—Rhadchampo. *Ben.*—Gorurchampa. *Uriya.*—Kalchampa. *Mah.*—Khairchampa. *Santal.*—Gulanjbala. *Gond.*—Champ-pungat. *Tam.*—Perungalli. *Can.*—Kadusampige. *Mal.*—Velutharali) is met with generally on the sea-coast districts of Southern India. The plant is milky. The *bark* bruised is applied as plaster over hard tumours. It is also recommended as a cure for gonorrhoea. The *leaves* made into a poultice are used to dispel indolent swellings, the *milky juice* is employed as a rubefacient in rheumatism. Internally the *root-bark* is a strong purgative. The bark of the tree is given with cocoanut, ghee and rice as a remedy for diarrhoea. The *flower-heads* are eaten with betel leaves in ague. The *milky juice* which is a gastro-intestinal irritant like gamboge is in minute doses, an effectual purgative. The dose is as much as a grain of

parched rice will absorb, the grain being administered as a pill. Externally the juice with sandal wood oil and camphor is employed as a cure for itch. The root is a violent cathartic. Its branches are used like those of *Chitraka* to procure abortion.

757.—Poa-Cynosuriodes or Eragrostis Cynosuriodes of the Graminaceæ (*Sans.*—Kusa. *Eng.*—Sacred kusagrass. *Bom.*—Durva. *Hind. Mah. Ben.*—Kusha. *Punj.*—Chinka.) is found on the plains of India. An *infusion* of its herb (1 in 20), dose 4 to 6 drachms, is used as diuretic and astringent. The drug is usually an ingredient in the Indian prescriptions for dysentery and menorrhagia. The root is regarded as litholytic.

758. Podophyllum Emodi, is a herbaceous plant of the genus Berberideae (*Sans.*—Laghu Pattra; Vakra. *Eng.*—Indian Podophyllum. *Hind.*—Papra Papri; Bhavanbakra. *Punj.*—Gulkakri. *Cash.*—Wunwangan. *Guz.*—Veniwel. *Mah.*—Padwal.) indigenous to the heights of above 9000 feet on the western Himalaya from Sikkim to Kashmir. The plant is closely allied in its constituents as well as in botanical characters to the American species P. Peltatum the source of the resin of Podophyllin of the B. P. The *resin podophyllin* consists of:—podophyllotoxin (an amorphous principle) podophyllic acid, podophylloresin and quercetin. The dose of the resin is $\frac{1}{8}$ to $\frac{1}{2}$ grain. In action it is cholagogue, alterative and bitter tonic. It is a sure purge in torpid liver, producing copious discharges. It is largely employed in bilious fevers. It is named "vegetable calomel" as its action somewhat corresponds to

that of mercury. It is usually given in pills alone or combined with other hepatics and purgatives or in solution in alcohol as tincture (1 in 30) ; the dose is 5 to 20 minims. The scarlet-red pulpy fruit is eaten by the hill tribes as the "May-apple" (fruit of P. Peltatum) is in America. It acts as a hepatic stimulant and cholagogue purgative—(Indigenous Drugs Report, Madras). The rhizome itself is not employed in medicine. A pill containing ½ grain of podophyllum emodi and 3 grains of extract hyoscyamus is an efficient purgative causing four to six watery stools containing much bile.

759. **Pogostemon Parvifloras**; P. Purpurascens; I. Plectosranthoides ; P. Purpuricalis is of Labiatae genus (*Mah.*—Pangra) growing in Deccan Peninsula.—Ratnagiri. It contains an alkaloid "*Pogostemonine*"—a yellow varnish of a slightly bitter taste and mouse-like odour ; trimethylamine, a volatile principle of the odour like that of cedar wood, resin and an astringent matter. In action it is stimulant. The fresh *leaves* are used as a *poultice* to clean wounds and to stimulate granulations. The root is used as a remedy for the bite of *Phursa* snake. The fresh root about the size of an almond is given internally three times a day and the paste of the root or poultice of the leaves is applied on the bites.

760. **Pogostemon Patchouli** (*Bom.*—Phangla. *Ben.*—Patchauli. *Guz.*—Pacha. *Mal.* & *Tam.*—Kattam. *Kon.*—Pat) is met with in the Deccan and sub-tropical Himalayas. The dried tops yield by distillation a strong scented volatile oil called "Oil of Patchouli." Its

leaves, flowering spikes or dried tops and root are used in medicine. An *infusion* (1 in 10) in doses of ½ to 1 fluid ounce is given. In action it is diuretic and carminative, generally given along with *Tulasi* seeds in scanty urine and biliousness. As an insecticide the herb is kept in the wardrobe to drive away flies, ants, moths, gnats and mosquitoes; also used as a perfume to prevent ravages of moths and insects in shawls and woollen clothes.

Polanesia Icosandra & P. Viscosa—See Cleome Viscosa.

761. Polyanthus Tuberosa of the genus Liliaceae (*Sans.*—Sandhyaraga. *Hind.*—Gulcheri; Gulshabba. *Ben.*—Rajanigandha. *Tel.*—Undi-Mandare. *Mal.*—Andimallery. *Kon.*—Gulsabo) is met with in Concan. The *bulb* is used in medicine; it is diuretic; chiefly used in gonorrhoea in the form of tincture (1 in 10) in ½ to 1 dr. doses. Rubbed with turmuric and butter it is applied as a *paste* over small red pimples which trouble new born infants; also applied to buboes. It sometimes emits phosphorescent light in the dark.

762. Polycarpoea Corymbosa of the genus Caryophyllae (*Porbander*—the small leaved Okhared) is found throughout India, Ceylon, Burma. The pounded *leaves* are used externally for bites of venomous reptiles and of animals also over boils and swellings as *poultice*. Internally they are used in the form of a *pill* in jaundice and in the bites of reptiles.

763. Polygala Crotalarioides & P. Telephioides, belonging to the genus Polygalaceae, (*Santal.*—Lilkathi) are found, the former in the Himalaya and the latter in

the Madras Presidency. They are used medicinally in catarrhal affections by the natives of the localities they grow in.

764. **Polyganum Aviculare**; P. Bistorta, P. Viviparum of the genus Polygonaceae. (*Sans.*—Miromati. *Arab.*—Asar-rai; Anjubar. *Eng.*—Knot grass. *Punj.* & *Hind*—Machuti; Kuwar; Nisomali; Bijband. *Pers.*—Hozar; Bandak. *Sind.*—Endraru. *Cash.*—Drob) is universal in India. Its constituents are:—Polygonic acid, tannic and gallic acids, starch and calcium oxalate. In action it is expectorant, diuretic, tonic, astringent and antiperiodic. Mixed with gentian it is given in *decoction of the root* (1 in 10) in 1 to 2 ounce doses in malaria, chronic diarrhoea and lithiasis; also used in capillary bronchitis, whooping cough and other lung affections; succus is also useful. The decoction is used in gleet and leucorrhoea as an *injection* and as an excellent *gargle* in relaxed sorethroat and spongy gums; and as an excellent lotion for ulcers.

765. **Polyganum Barlatum** or P. Rivulare (*Punj.*—Narri; Bekh-unjubaz. *Tam.*—Atalari. *Tel.*—Kondemalle; niruganneru. *Malay.*—Velluta modela mukku. *Mah.*—Dhakta sheral. *Jaspur.*—Mangarleta) is found throughout the hotter parts from Assam to the Indus and southwards to Ceylon etc. The *seeds* are employed to relieve the griping pains of colic. The *root* is used as astringent and cooling. A *decoction of the leaves* and stalks is a stimulating wash for ulcers.

766. **Polyganum Glabrum** & P. Persicaria (*Assam.*—Larborna; Bih langani; Patharua. *Santal.*—Sauriarak; Jioti. *Bom.*—Takta rohida. *Tam.*—Atala-

ria. *Kon.*—Sisori) is growing in ditches from Assam, Sylhet and Bengal westward to the Indus, southward to Burma. *Infusion of the leaves* is used to relieve pain of colic. It is also employed as a cure for "stitch in the side" and in Assam as a remedy for fever.—(Watt).

767. **Polyporus Officinalis** is a fungus (*Eng.*—White Agaric; Bamboo or worm Mushroom *Hind.* & *Bom.*—Gharekun). In shape and appearance it resembles *Bhui Kohala.* The odour is acrid and taste is bitter. It contains resin. In small doses it acts as an astringent, and in large doses as emetic and purgative. Its active principle "agaricin" is a powerful anhidrotic checking the night sweats of phthisis; dose is $\frac{1}{6}$ grain. In order to check its laxative effect it is given combined with Dover's powder. The drug is used in the form of pill, powder and decoction. "As a cathartic it is given with honey in eruptive fevers to promote the rising of the eruptions. In large doses it gives rise to large watery motions, to nausea and vomiting, and also to excessive sweats. In spasmodic cough and phthisis, combined with liquorice it is very useful in checking, collequative sweats. Applied to the breasts it stops the secretion of milk. It checks bleeding from leech bites. Dose.—2 to 3 grains every hour."—(Khory).

768. PONGAMIA GLABRA or Galedupa Indica.

(*N. O.*—LEGUMINOSAE)

Sans.—Karanja; Naktamala. *Eng.*—Indian Beech. *Hind.*—Korang; Kidamal. *Punj.*—Suckchain. *Ben.*—Dahar-

karanja. *Bom.* & *Mah.*—Kidamar. *Tel.*—Kanagu. *Tam.* & *Mal.*—Pungam-maram. *Can.*—Honge-mara. *Kon.*—Karinje-rooku.

Habitat.—This tree is common all over India.

It is of six varieties:—(In Bengali)—Dahar karanja; Nata karanja; Kanta karanja; Makra karanja; Bish karanja and Amba karanja. Karanjika is one of the varities called Kanta-karanja. "It is bitter, acrid, stimulant, astringent and beneficial in gonorrhoea, leprosy, piles, boils and intestinal worms. Karanji is the variety called *Maha-karanja* in Bengali and *Arabi* in Hindi. It is bitter, stimulant and beneficial in piles, vomiting, intestinal worms, leprosy and gonorrhoea. Karamarda is otherwise called *Amla karanja* in Bengali, *Karoda* in Hindi, *Karamande* in Mahrati and *Karanjay* in Karnatic. The fresh fruit is appetiser, astringent, alleviative of thirst and generative of phlegm. The ripe fruit is refrigerant, appetiser and alleviate of bile and thirst"—(N. N. Sen Gupta).

Parts Used.—The seeds, stem, leaves, fruit, root and oil.

Constituents.—The seeds contain a bitter and pale sherry colored oil 27 p. c. known as Pongamia oil or *Honge* oil. The bark contains a bitter alkaloid, resin, mucilage, sugar, but no tannin.

Action.—The expressed oil from the seeds has antiseptic and stimulant healing properties. The oil appears to be an active agent as the residue after expression is inert. The seeds, leaves, root and oil are antiparasitics; they destroy both vegetable and animal parasites in skin diseases. The bark is astringent.

Uses.—The *oil* is applied to skin diseases, in scabies, sores, herpes and the like cases of eczema have been benefitted by applying a mixture of the oil and zinc oxide (1 drachm to 1 ounce of the oil). An embrocation made of equal parts of the oil and lemon juice is an application in rheumatism (muscular and articular), in psoriasis, porrigo capitis and pityriasis. A *decoction of the leaves* is applied as bath or fomentation to the rheumatic joints. The *juice* of the stem, leaves and root is useful similarly. For destroying worms the juice of this plant with that of *Neem* and *Nirgund* or the leaves of all these ground into a paste are used. The juice with cocoanut milk and lime water well shaken and in obstinate cases with hydnocarpus oil, camphor and sulphur added is a remedy for gonorrhoea; a *poultice of the leaves* is used in ulcers infested with maggots; and the juice of the leaves is useful in flatulency, dyspepsia and diarrhoea. In leprosy the leaves of *Karanja* and *Chitraka* mixed with pepper and salt are powdered and given with curds.—(Dymock). The *pulp* of the seeds is an application in leprosy. The *young leaves* are applied to bleeding piles. The *bark* is useful internally in bleeding piles. Dried *flowers in powder* in combination with other ingredients is given as decoction in diabetes to quench thirst. The *seeds* of Pongamia glabra, Cassia Tora, and the root of Aplotaxis auriculata are rubbed into a *paste* with cow's urine, and applied to eruptive skin diseases—(Chakradatta). In the same is recommended an oil called *Prithvisara Taila*; it is prepared thus :—Take of the expressed oil of the seed of Pongamia glabra 1 seer, *Kanjika* 8 tolas, roots of Plumbago Zeylanica, Nerium odorum, Vitex Negundo, Aconite and

the seeds of Corchorus Olitorius 8 tolas each, in the form of a paste made with *Kanjika*. Mix them together and warm in the sun. This oil is said to be useful in various sorts of skin diseases, ulcers etc. Chakradatta recommends also an ointment known as *Tiktadya Ghrita* ; it is made thus :—Take of the leaves and fruits of Pongamia glabra, root of Picrorrhiza Kurroa, wax, turmeric, liquorice root, leaves of Trichosanthes dioica, Aganosma Caryophyllata and Azadirachta Indica equal parts, in all one seer. Beat them into a paste and boil with 4 seers of clarified butter and 16 seers of water in the usual manner. This preparation is used as an ointment in unhealthy ulcerations and wounds. In enlarged scrotum and scrofulous enlargements, the *root of Karanja* rubbed with rice water into a paste or *Lep* is applied locally. The " juice of the root is used for cleansing of foul ulcers and closing fistulous sores."—(Ainslie). Internally it is given in gonorrhoea and urethritis. The *flowers* are used as a remedy for diabetes. The *pods* are worn round the neck in whooping cough. The *seeds of Karanja* are powdered after decortication and given as a specific for whooping cough. For infants and young children the dose is from 1 to 5 grains according to age. For those above 12 years the dose is 15 grains. The powder should not be wrapped in paper as paper absorbs its oil. The powder loses efficacy on being kept and should therefore be prepared fresh.

769. Portulaca Oleracea belonging to genus Portulaceae (*Sans.*—Loni. *Eng* :—Common Indian Parselane. *Arab.* & *Pers.*,—Kurfa. *Hind.* & *Ben.*—Chhota Lunia. *Uriya.*—Puruni-sag. *Punj.*—Lonak ; (seeds) dhamni. *Mah.*—Bhuigholi. *Guz.*—Loni. *Tam.*—

Parpu-kire. *Tel.*—Peddapavila kura. *Can,*—Duda-gorai) is found throughout India in all warm climates; it is an abundant weed in cultivated grounds throughout Ceylon. Its bruised *leaves* are applied to the temples to allay excessive heat and pain and the *juice* is of use in spitting of blood. The plant and *seeds* are used in diseases of the kidneys and bladder, as strangury, dysuria, haematuria, gonorrhoea etc., and of lungs also such as haematemesis, haemoptysis etc ; also as external application in burns, scalds and various forms of skin diseases. The seeds are described as demulcent, slightly astringent and diuretic ; the leaves as astringent, refrigerant, diuretic and emollient. The herb abounds in a milky juice and hence the name portulaca (portu—to carry and lac—milk). A *paste* made of it with *gokhru*, *Kakdibij* and *Javakhar* is used in gonorrhoea, scanty urine etc., dose is 2 to 3 ounces. The *seeds* are beneficial to intestinal mucous membrane and therefore relieve tormina, tenesmus and other distressing symptoms in dysentery and mucous diarrhoea, particularly when combined with some other drugs of similar nature.—(Moideen Sheriff). The *seeds* and *expressed juice* may be administered in doses of from 30 to 60 grains of the former and from 1 to 2 fluid ounces of the latter or of the *infusion* of the leaves and seeds, which act as substitutes for spirits of nitrous ether, Pareira, tragacanth, elm bark rhatany, copaiba and ice. The herb is chiefly valued as a refrigerant and alterative pot-herb, particularly useful as an article of diet in scurvy and liver diseases. The *juice* of the stems may be applied with benefit to prickly heat as well as to the hands and feet when a burning sensation is felt. The seeds are believed to be also vermifuge.

770. Portulaca Quadrifida or P. Maridiana (*Sans.*—Laghu lonika. *Hind.* & *Ben.*—Nunisak; Baralunia. *Punj.*—Luni-buti. *Bom.*—Chavel-ke-bhaji. *Mah.*—Ran-ghol. *Duk.*—Gholi-ki-bhaji. *Tam.*—Soin-pappu-kirai. *Tel.*—Sanna-pappu; Goddu-pavili. *Kon.*—Bhui-goli. *Can.*—Hali bachchele. *Cing.*—Hin-gende-kola), a diffuse annual succulent herb is found throughout the warmer parts of India. The leaves contain mucilage and acid potassium oxalate. Uses of the leaves are similar to those of P. Oleracea. The seeds also possess qualities identical with those of P. Oleracea.

771. Portulaca Tuberosa (*Sind.*—Loonak; Dhamnee (the seed). *Tel.*—Boddakura) is a species growing in Behar, Sind, the Punjab and the Western Peninsula. The fresh acid leaves are used medicinally. An external application made of them is used in erysipelas and an infusion in dysuria.

Pothos Officinalis—See Scindapsus Officinalis.

772. Prangos Pabularia is of the genus Umbelliferae (*Sans.*—Komal; Avipriya. *Eng.*—Silphium Parsley. *Ind. Bazar* & *Bom.*—Fiturasalium. *Arab.*—Phatera-e-Saleyuni. *Afghan.*—Badian-e-hohe. *Mah.*—Phatura-Salyuna. *Thibet.*—Prangos. *Hind.*—Komal) is found in the north of India, Tibet and Cashmere. The dried fruit contains an essential oil, a trace of fixed oil, resins, traces of an alkaloid, quercitrin in large amount and etherial salt of valeric acid. The *root* is diuretic; the fruit is carminative and stimulant. *Infusion of the fruit* (1 in 20); *decoction* of the root (1 in 20) are used in doses of 1 to 2 ounces; given in urinary diseases, gravel, strangury and dyspepsia; also in dropsy and gonorrhoea,

773. **Premna Herbacea** of the genus Verbenaceae (*Sans.*—Boomi-Jambuka. *Ben.*—Bhooi-jam. *Mah. Hind.* & *Guz.*—Bharangi. *Tam.*—Shirutek. *Tel.*—Gunta Bharinga. *Can.* —Nayit-yaga *Cing.*—Shiribekku) is found on the Himalayas and Deccan. The root contains an orange brown acid resin (soluble in ether, alcohol and alkaline solutions), traces of an alkaloid, also a quantity of starch, but no tannin. The *root* and the *leaves* are used in the form of *decoction* (1 in 20) in doses of 1 to 2 ounces. *Fresh juice* of the root with the juice of ginger and warm water or the *root* beaten in the form of a *pulp* with ginger and warm water is given in asthma. It is also used in cough, fever, dropsy and rheumatism. The root is stimulant, alterative and bitter tonic and used in catarrhal affections of the lungs, asthma, coughs, fever and scrofulous diseases. The leaves are alterative and used in fever, cough, rheumatism etc. As a *poultice* the leaves are used in promoting the suppuration of boils.

774. **Premna Integrifolia or P. Spinosa or P. Serratifolia** (*Sans.*—Arani; Agni-mantha; Hari-mantha; Gani-karika. *Ben*—Bhut-bhiravi. *Guz.* & *Bom.*—Airanmula. *Hind.*—Ganiari. *Tam.*—Munnay. *Tel.*—Ghebinelli. *Mal.*—Appel. *Can.*—Takkile) is growing on the coasts of India, and Ceylon. Its constituents are a resin, a bitter alkaloid and tannin. In action it is stomachic, carminative, alterative and tonic. The *infuston of the leaves* (1 in 10) is used in eruptive fevers, colic and flatulence, in doses of 1 to 2 ounces; the *decoction of the root* (1 in 10) is given in gonorrhoea and during convalescence from fevers; also in rheumatism

and neuralgia. The root forms an ingredient of *dasamula* and thus used in a variety of affections. The root rubbed into a *paste* with water is recommended to be taken with clarified butter in urticaria and roseola for a week.—(Chakradatta).

775. Prosopis Spicigera (*Sans.*—Sami. *Ben.*—Sai. *Hind.*—Cikura) is a species found throughout India extending to Persia, whose sickle-shaped fleshy pods which are 4 to 8 inches long and contain a sweetish mucilaginous pulp are used as a demulcent and pectoral. From them have been obtained carobin, carobone, and carobic acid. The seeds furnish a yellow dye. The *bark* and *leaves* are used in tanning and a manna-like substance exudes from the trunk and branches.—(Chakravarthy).

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776. PRUNUS AMYGDALUS, Var. (1) Amara. (2) Dulcis.

(*N. O.*—ROSACEAE.)

Sans.—Badama. *Eng.*—Almond. *Kon. Mah. Duk. Guz. Hind. Pers.* & *Bom.*—Badam. *Arab.*—Louza (pale or murra). *Ben.*—Bilati-badam. *Tel.*—Badamvittulu. *Tam.*—Vadam kottai. *Can.*—Badamu.

Habitat.—The almond tree is a native of Western Asia. It is cultivated in cooler parts of India—in the Punjab and Kashmir and in Afghanistan, whence the fruit (almond in shell) is brought in large quantities to India.

Parts Used.—Sweet almonds; the almond shell; the ripe seed, bitter almonds; oil expressed from bitter or sweet almonds.

Constituents.—Sweet almonds contain a fixed oil 56 p. c., an albuminous principle or ferment "emulsin" soluble in water, mucilage 3 p. c., sugar 6 p. c., proteids (more soluble than the gluten of wheat) 25 p. c. ash 3 to 5 p. c., containing potassium, calcium and magnesium phosphates. Bitter almonds contain a fixed oil 45 p. c., amygdalin 3 p. c., proteids 25 p. c. emulsin, sugar 3 p. c., mucilage 3 p. c., and ash 3 to 5 p. c. Amygdalin is a crystalline substance, a glucoside not found in sweet almonds. In the presence of water the emulsion acts as a ferment on amygdalin producing benzoic aldehyde, prussic acid and glucose.

Action:—Sweet almonds are demulcent, nutritive and emollient. Bitter almonds are emollient, demulcent and laxative, and are used as sedative in coughs etc. Bitter almonds are described by Hakims as attenuent and astringent; they are also considered to be lithontriptic and diuretic. The root of the tree is described as discutient and alterative.

Uses:—The expressed *oil* of the sweet almonds is bland and slightly laxative. The *cake* left after expression of the fixed oil is ground into powder and used to replace wheat flour as a food in cases of diabetes either alone or combined with the proteids of milk, to form cakes. Almond nut *cream* is recommended for brain workers; it is made as follows.— Pound or mince finely, three blanched almonds, two walnuts, two ounces of pine kernels and steep overnight in orange or lemon juice. This cream should be made fresh daily and may be used in place of butter. Almonds should always be blanched in hot water; the skins are indigestible. The *essential oil* of bitter

almonds (benzoic aldehyde) is used for flavouring custards etc., but great caution is necessary on account of the presence in it of a poison—the prussic acid. The *bitter almonds* are recommended by Hakims both internally and externally for various purposes. As a *plaster* made with vinegar they are used to relieve neuralgic pains. as a *collyrium* to strengthen the sight, in *emulsion* with starch and peppermint to allay cough. They are also of use for removing obstructions of the liver and spleen. Applied to the head they kill lice; as a suppository they relieve pain in difficult menstruation; as a *poultice* they are a valuable application to irritable sores and skin eruptions. The *juice* of almonds mixed with sugar is used in coughs. Almonds mixed with figs are laxative and relieve pain in the bowels. The gum *Badam-i-gond* which the tree yields is occasionally used in place of tragacanth. An emulsion produced from the sweet almonds by triturating the powdered kernels with water or with orange or lemon juice is useful in bronchial diseases, hoarseness, tickling cough etc., in dysentery and several urinary affections frequently lessening the acrimony of the secretions. A *confection* made of sweet almonds together with several other ingredients, and called *Laboobai Saghur* is recommended as useful in polyuria due to kidney affection, in building up the kidney tissue and nervous tissue and also to increase and thicken the semen; dose is ½ to 1 tola with 2 to 3 ounces of milk. The *milk-like emulsion* made by rubbing the powdered seeds of the bitter variety is useful in certain skin affections; but it is *never given internally* on account of the prussic acid formed therein. *Sweet almond meal* has been recommended as a suitable diet for diabetic

patients as it contains no starch. The burnt shell (almond shell charcoal) is used as a tooth-powder.

777. **Prunus Armeniaca** or Amygdala Vulgaris is another species (*Eng.*—Apricot. *Himalayas.*—Chulu; Chinaru. *Bokh.*—Baboor kohani. *Arab.*—Binkook Tuffa armina. *Pushtoo.* & *Hind.*—Jardalu. *Pers.*—Mish-mis. *Sutlej.*—Jaldaru. *Punj.*—Gardali; Shiran. *Cash.*—Iser. *Kumaon.*—Chuaru) is met with on Himalaya, Deccan and Mysore also. Almost naturalised in N. W. India. In action apricots are nutrient and tonic. It is stated that apricots form antidotes to hill-sickness. The *dried fruit* is used in fevers to allay thirst as refrigerant and laxative. The *seeds* form an ingrediernt in some of the nutritive confections. Apricot kernels contain from 40 to 45 p. c., of an almost colorless oil which becomes yellow on keeping. Apricot oil is almost similar to almond oil in its physical and chemical characters.

778. **Prunus Cerasus** (*U. P.*—Alu-balu. *Punj.*—Gilas; Olchi) is cultivated in the Himalayas, the Punjab and the U. P. The *bark* which is bitter is said to possess febrifugal properties. The *kernel* is supposed to be a nervine tonic and is used for the same purposes as hydro cyanic acid of which it contains a considerable proportion,

779. **Prunus Communis**; P. Institia (*Sans.*—Arook. *Eng.*—The Bokhara Plum; Cherry plum. *Pers. Arab. Cash. Duk. Guz. Hind.* & *Ben.*—Alubokhara *Tam.*—Alpogada-pazham. *Tel.*—Alpogada pandu) is a tree growing on the Western temperate Himalaya. The *fruit* contains malic acid, citric acid, sugar, albuminoids, pectin and ash. It is demulcent and nutrient. It is largely consumed by the rich in various forms of *chutney*. It

acts also as a cooling laxative especially when taken on empty stomach; useful in bilious states, and heat of body, and in cases of torpid and enlarged liver, gonorrhoea, piles etc ; and it is regarded as suitable for all the purposes to which the English plum is put. The *gum* may be used as a substitute for gum Arabic. The *oil* prepared from the seeds resembles apricot-kernel-oil and is edible. The *root* is astringent.

780. **Prunus Domestica** *Var.* Juliana is a variety of the above species (*Eng.*—Common plum; prunes. *Hind.*—Alu ; alucha; shanalu) found in Persia, Afghanistan and Cashmere. The pulp or sarco-carp contains a little malic acid, sugar 25 p. c., pectin, albumin and salts. The *seeds* contain a fixed oil, amygdalin and emulsin. The *sarcocarp* is laxative, demulcent and nutrient. They may be taken at the morning meal by those who suffer from acid dyspepsia.

781. **Prunus Padum** or P. Sylvatica or Cerasus Puddum (*Sans.*—Padmaka; Padmaksh. *Hind.*—Paddam *Punj.*—Chamiari; Amalguch. *Mah.*—Padma kastha, *Guz.*—Padma kathi) is a native of Temperate Himalaya from Garhwal to Sikkim and Bootan. The *fruit* is acid and somewhat astringent. The *kernel* is used in stone and gravel. The *bark* contains amygdalin and the smaller branches are sold in the bazaars as substitutes for hydrocyanic acid in Indian practice—(Watt).

782. **Prunus Padus** or Cerasus Corunta is a species (*Eng.*—Birdcherry. *Hind.*—Jamana. *Nepal.*—Likharu; Arupatai. *Punj.*—Paras; Kala-kat. *Cash.*—Zamb chule) found in the temperate Himalaya from Murree to Sikkim and Butan. The *seeds* yield a poisonou

oil like oil of almonds and is much used in medicinal preparations and remarkable for its siccative properties. The pressed cake and seeds distilled in water give considerable quantities of hydrocyanic acid and benzoyl aldehyde (oil of bitter almonds).

783. **Prunus Serotina** (*Eng.*—Cherry) is a native of Europe. But the fruits are available in India. The *cherry* is valuable for its beneficial effect on the kidneys. It is a very luscious fruit, easily digested if thoroughly ripe. In France *soup* is made from dried cherries and eaten with bread; it is a chief food of the peasantry during the winter months. The *bark* is mild, bitter and tonic containing tannin. Dose of the fluid extract is ½ to 1 drachm and of the concentrated extract "prunin" is 1 to 3 grains.

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784. PSIDIUM GUYAVA; Var. P. Pyriferum (*white*); P. Pomiferum (*red*).

(*N.O.*—MYRTACEÆ)

Sans.—Perala. *Eng.*—The Guava. *Hind.*—Lal sufrium (red); Amrat. *Ben.*—Lal peyara (red); Goachi-phal. *Bom.*—Perala. *Tel.*—Jam-pandu; Goyya pandu. *Tam.*—Koyyapalam. *Can.*—Perala; Jama-phala. *Mal.*—Palamper. *Kon.*—Paera.

Habitat.—This tree is cultivated nearly all over India and is common in Bengal.

Parts Used.—The bark, fruit and leaves.

Constituents.—The bark contains tannin 27. 4 p. c. resin and crystals of Calcium oxalate. There is a high percentage of carbo-hydrates and salts. The leaves contain resin, fat, cellulose, tannin, volatile oil, chlorophyll and

mineral salts. The fat dissolves completely in chloroform partially in ether or alcohol. The greenish volatile oil contains eugenol and dissolves in chloroform ether or alcohol, Calcium and manganese are present in the plant in combination with phosphoric oxalic and malic acids.

Action—The stem, bark and root-bark are astringent. The unripe fruit is indigestible, causes vomiting and feverishness.

Uses.—This tree is much valued on account of its pleasant fruit, but its seeds are injurious. The *fruit* forms, when stewed, the well known guava jelly; the *jelly* is tonic to the heart and good for constipation. The *ripe fruit* is a good aperient. It should be eaten together with the rind; if eaten without the rind it causes costiveness. The unripe fruit is employed in diarrhoea. The fruits are recommended by Garrod for gout. Water in which the fruit is soaked is good for thirst in diabetes. The *root-bark* is successfully employed in chronic infantile diarrhoea in the form of concentrated decoction, (1 in 12); dose is 1 drachm. It is administered in cholera for arresting vomiting and diarrhoeaic symptoms (especially those of the red variety). Locally the *decoction* is applied with much benefit to the prolapsus ani of children; employed in scurvy and for unhealthy ulcers, and as a mouth-wash for swollen gums. The *leaves* when ground make excellent *poultice.*

Psidium Pomiferum (*Sans.* & *Hind.*—Anjira)—See Ficus Carica.

Psophocarpus Tetragonolobus—See Dolichos Lablab.

785. **Psoralea Corylifolia** is a plant of Leguminosae (*Sans.*—Vakuchi; Sugandha kantak. *Eng.*—Babchi seeds. *Hind.*-Babachi; Bhavaj. *Ben.*-Latakasturi, Hakuchi. *Bom.*—Bawachi. *Mah.*—Bavanchi. *Tel.*—Bhavanchi vittulu; Bogi vittulu. *Tam.*—Karpokarishi) common in Bengal and all over the plains of India. The seeds yield a colorless essential oil, 20.15 p.c., extractive matter 13.5 p.c., albumen, sugar, ash 7.5 p.c., containing a trace of manganese. The *seeds* are laxative, stimulant and aphrodisiac; also anthelmintic, and said to be useful in bilious affections. The seeds are used to make a perfumed oil. The *oleo-resinous extract* of the seeds diluted with chaulmugra oil and with simple ointment is recommended as an application in cases of leucoderma or white leprosy and other skin diseases. The *ointment* may be prepared by combining one part of an alcoholic extract of the seeds with two parts of chaulmugra oil and two parts of lanoline. The proportion of the active ingredient may be increased if the action is delayed.

786. **Pterocarpus Marsupium**; P. Indicus is a Leguminous tree (*Sans.*—Pitasala. *Eng.*—The Indian Kino; Malabar Kino. *Arab.*—Damula akhavena hindi *Pers.*—Khune Siyiavushane hindi. *Duk.*—Natka damula. *Hind.*—Bijasar. *Ben.*—Pit-sal. *Bom.*—Chinai-gond (gum). *Mah.*—Bibla; Honne. *Tel.*—Peddagi. *Tam.*—Vengai-maram. *Can.*—Hanemara) common in Central and Southern India and Ceylon. This tree is the source of the kino of the European Pharmacopoeas. Kino is the juice obtained by incisions in the trunk inspissated without artificial heat. The principal constituent of kino is a peculiar tannin—kino-tannic acid 70 to 80 p. c., usually believed

to be identical with catechu-tannic acid and distinct from gallo-tannic acid. By boiling an aqueous solution of kino-tannic acid a precipitate of kino-red is obtained; treated with dilute acid a similar precipitate occurs and crystals of kinoin separate. Other constituents of Kino are pyrocatechin, gallic acid and gum. It is partially soluble in water, more so in boiling water and almost entirely in alcohol, about 90 p. c. *Kino* is a simple astringent, administered in diarrhoea; somewhat milder in action than catechu, therefore better adapted for females and children. The *gum* is used for toothache. The *bark* is used in *powder* or *decoction* in diarrhoea, pyrosis etc. The *bruised leaves* are applied as *paste* to boils, sores and skin diseases.

787. PTEROCARPUS SANTALINUS; P. Lignum.

(*N. O.* Leguminosae.)

Sans. Ben. Mah. & Can.—Rakta chandana. *Eng.*—Red Sanders or Red Sandalwood. *Fr.*—Santal Rouge. *Ger.*—Dunkelrothe Flugalfrucht. *Hind.*—Lalchandana. *Pers.*—Sandale surkh. *Guz. & Bom.*—Ratanili. *Tel.*—Raktā gandhamu. *Tam.*—Shen-chandanam. *Mal.*—Chanchandanam. *Kon.*—Rachandana.

Habitat.—This small tree is generally met with in the forests of Southern India.

Parts Used.—Wood.

Constituents.—Santalin or santalic acid, a crystalline red principle; santal pterocarpin, a white crystalline insoluble substance; homopterocarpin with the same general properties, but more soluble in carbon bisulphide

Action.—Mildly astringent and tonic.

Uses.—The heartwood of red sandalwood is called Santalum rubrum. It enters into the composition of numerous astringent remedies used in complaints like bleeding piles, haemorrhages, dysentery etc. Powdered and mixed with milk it is taken for bleeding piles. A *decoction* of the legume is useful in chronic dysentery. The wood is also an ingredient of cooling external applications for inflammations, piles, headaches etc. The *wood* powdered or beaten up into a *paste*, is applied to eyes in ophthalmia and to sore eyes; rubbed with honey or with oil it is applied to boils and abscesses. The *wood* rubbed on a piece of stone with water forms an excellent cooling application and purifier of skin after bathing like white sandalwood. It is also employed as a wash in superficial excoriations of the genital organs. In British Pharmacy the *wood* is generally employed as a coloring agent in the compound tincture of lavender and in Indian preparations, as an ingredient of several medicated oils.

788. Pterospermum Acerifolium (*Ben.*—Muchukunda. *Ger.*—Abornblattriger Flugelsamen) is a species of Sterculiaceae growing in Bengal; its yellowish fragrant flowers are used in leucorrhoea, gastralgia and the tomentum of the leaves is employed as a haemostatic.

789. Pterospermum Glabrescens (*Tam.*—Thaddo) is a species found in Malabar where its leaves are used in epididymitis.

790. Pterospermum Heyneanum (*Tel.*—Lolangu) is a species found on the Eastern coast of India where its flowers are used in leucorrhoea and the *powdered leaves* are smoked in nervous headache.—(Chakraverthy).

791. Pterospermum Suberifolium or P. Canescens (*Sans.*—Moochukunda. *Ben.*—Muscunda. *Uriya.*—Baelo giringa. *Tel.*—Lolagu. *Tam.*—Taddo. *Hind. Ben. & Mah.*—Muchkand. *Burm.*—Naji. *Cing.*—Velenge; Venangu) is found growing on the Western Peninsula, Konkan and in many other parts, as far as Burma in the East and Ceylon in the South. The *flowers* made into a *paste* with rice-vinegar or *Kanjika* forms a useful application for hemicrania; also for leucorrhoea. In the Konkan the flowers and *bark* of this and P. Acerifolium are charred and mixed with Kamala and applied to suppurating small pox.—(Dymock.) The sepals are much used by high class ladies in their hair on account of the lasting fragrance of the glands.

792. PTYCHOTIS AJOWAN; P. Coptica; P. Roxburgianum; Ammi Coptcum.

(*N. O.*—UMBELLIFERAE).

Sans.—Yavanika; Ajmada; Agniverdhana; Deepyaka *Eng.*—Bishop's weed; Omum (seeds). *Ger.*—Indisches Faltenohr. *Pers.*—Ziniana-a-Nankhvah. *Arab.*—Tolib-ul-Khubza; Amusa; Kamumi-muluki. *Hind.* & *Duk.*—Ajawan. *Ben.*—Jowan. *Punj.*—Ajawain. *Cash.*—Jawind. *Mah.* & *Bom.*—Vova. *Kon.*—Vovo. *Guz.*—Yavan; Ajamo. *Tel.*—Omamu. *Tam.*—Omum. *Can.*—Voma. *Mal.*—Homam; Ayamodakam. *Cing.*—Assamodagam. *Burm.*—Samhun. *Malay.*—Lavinjularmisi.

Habitat.—This plant is largely cultivated in Eastern India.

Parts Used.—The fruit.

Constituents.—An aromatic volatile oil and a crystalline substance—stearoptin, which collects on the

surface of the distilled water; also cumene and terpene, "thymene". The stearoptin known as *ajwan-ka-phul* (flowers of ajowan camphor) is identical with English thymol contained in Thymus Vulgaris.

Action—Diffusible stimulant, stomachic, carminative antispasmodic and antiseptic. It checks chronic discharges such as profuse expectoration in bronchitis.

Uses.—The omum *seeds* are useful in flatulence, colic, atonic dyspepsia, diarrhoea, cholera, hysteria and spasmodic affections of the bowels. The *volatile oil* is used in cholera, flatulent colic, atonic dyspepsia or diarrhoea, hysteria and indigestion. It produces a feeling of warmth and exhilaration and relieves the sinking and fainting feelings which accompany bowel disorders. The dose of the oil is from 1 to 3 drops on sugar or made into an emulsion with mucilage and water. Externally it is applied to relieve rheumatic and neuralgic pains. The *oil* and the *distilled water* from the seeds, known as *Ajwan-ka-arak* or omum water in doses of 1 to 2 ounces are useful in the early stages of cholera to check the vomiting and purging and to stimulate the system. Omum water and lime water each 1 ounce with 5 minims of tincture of opium added is a good remedy for diarrhoea; and an ounce each of omum water and infusion of chiretta with a grain of sulphate of iron added to the mixture forms a nice general tonic, taken twice daily. It is advantageously combined with other aromatics such as eucalyptus, peppermint, gaultheria etc., to make it an efficient carminative. The *oil* and the *flowers of Ajowan* combined with soda forms a nice remedy for acidity, dyspepsia, flatulence etc. Omum seeds, black pepper, ginger, each ½

drachm and cardamom 1 drachm all powdered and mixed forms a useful carminative for colic etc; dose is one drachm twice daily. The *seeds* are used also as spices along with betel-nuts and *pan* leaves in flatulence, dyspepsia and spasmodic affections. A teaspoonful of the seeds with a little rock salt is a common domestic remedy for indigestion from irregular diet. In cases of colic or pain in the bowels, Chakradatta recommends a compound powder, made up of equal parts of *Ajowan*, rock salt, *sonchal* salt, *Yavakshara*, asafoetida and chebulic myrobalans. Dose is 10 to 20 grains taken with wine. For stomach ache, cough and indigestion, omum seeds are masticated and swollowed, and followed by a drink of hot water. For biliousness, vomiting, cold etc., omum seeds and *gool* mixed together are eaten. For coryza, migraine, delirium etc., omum seeds powdered tied up in a piece of thin cloth or muslin and smelt frequently or the powder may be used in cigarettes and smoked. A *plaster* or *poultice* of the crushed seeds is used to relieve the pain of colic. The omum seeds made hot are used as a dry fomentation to the chest in asthma and to the hands and feet in cholera, fainting and syncope. A *compound decoction* made of the seeds, *pipli*, Adhatoda leaves and poppy capsules, is used for internal administration, in doses of ½ to 1 ounce. In cases of difficult expectoration from dried up phlegm or its tenacity, butter milk with *powder* of seeds added is taken internally. *Ajowan* of the variety imported from Khorasan province of Persia is said to be good for ankylostoma; it is taken with rock salt in empty stomach early in the morning.—(Dr. Roy). The wild variety (*Vanajowani*) is also good and is an ingredient in several vermifuge

combinations. With astringents the seeds are used as a topical remedy in relaxed sore-throat; they are further used to disguise the taste of disagreeable drugs especially castor oil and to obviate their tendency to cause nausea and griping. In habitual drunkenness and dipsomania omum is useful. "On account of its biting or pungent, yet pleasant taste and the sensation of warmth it creates in the stomach, it has been constantly recommended, of late years to those afflicted with the desire for alcoholic drinks. It does not of course intoxicate, but it is no mean substitute for the ordinary stimulant, in removing almost immediately the sensation of 'gnawing or sinking at the pit of the stomach, which the frequent use of spirits so invariably brings on"—(Wood). He states that it has been the means of rescuing many otherwise sensible and useful men from slavery to the habit of spirit-drinking. The *leaves* of the tender omum plant (before it begins to bear seed) are used as vermicide; the *leaf-juice* is given for worms. The leaves bruised into a mass or *poultice* are applied or rubbed over the bites of poisonous insects. A *compound oil* made up of the leaf-juice of *Ajwan*, *Ispand* (Henna) and *Malkangni*, each one part, and three parts sweet oil is recommended in *Ilaj-ul-Gurba* for diseases of ear and nose.

793. **Pueraria Tuberosa** or Hedysaram Tuberosa is a large deciduous climber with woody tuberculated stem belonging to genus Leguminosae (*Hind.*–Bilaikand; Bidari kand. *Ben.*—Shimeeya; Batrajee. *Punj.*—Siali; Sural. *Tel.* —Daree; Goomodee. *Raj.*—Gorabel. *Guz.*—Karwai-nai, found on the hills of the Concan, Deccan, Canara Himalayas, Nepal, Orissa, Behar etc. The *tuberous root*

peeled and bruised into a *cataplasm* is applied to reduce swellings of the joints. It is given as a demulcent and refrigerant in fevers—(Watt). In Nepal it is employed as an emetic and tonic and is believed to be also lactagogue.

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794. PUNICA GRANATUM.

(*N. O.*—LYTHRACEAE.)

Sans.—Dadima-phalam; Kuchaphala; Shukadana. *Eng.*—Pomegranate. *Fr.*—Grenadier cultive. *Ger.*—Granatbaum. *Hind.*—Anar. *Duk.* & *Ben.*—Darim. *Pers.*—Gulnar. *Arab.*—Rumman. *Cash.*—Dhaun. *Guz.*—Dadam. *Mah. Can.* & *Kon.*—Dalimba. *Tel.*—Dadima. *Tam.*—Madalai. *Mal.*—Matalam. *Cing.*—Delumgaha. *Burm.*—Sale-bin; Talibin. *Malay.*—Dalima.

Habitat.—This tree is found wild in Persia, Afghanistan and Baluchistan, and cultivated nearly all over India. The Indian fruit is inferior to the imported one.

Parts Used.—The flowers, rind of the fruit, fruit-juice, dried bark of the stem and root.

Constituents.—The bark and the rind of the fruit contain tannin 22 to 25 p. c., and the root-bark contains punico-tannic acid 20 to 25 p. c., mannite, sugar, gum, pectin, ash 15 p. c., an active liquid alkaloid "pelletierine" and oily liquid "isopelletierine" and two inactive alkaloids methyl-pelletierine and pseudo-pelletierine. The punico-tannic acid when boiled with dilute sulphuric acid is resolvable into ellagic acid and sugar.

Action.—Granatum grains and its alkaloids are astringent, anthelmintic and taenifuge. The flowers and

rind of the fruit are astringent and stomachic. The juice of the fruit is cooling and refrigerant. The alkaloid "pelletierine" is anthelmintic and taenicide. The leaf-juice is styptic and astringent. The dried bark of the stems and roots is anthelmintic.

Uses.—The pomegranate *fruit* has long been esteemed as food and medicine. *Syrup* prepared from the fruit is useful in all bilious complaints, and is a cooling drink. ILAJ-UL-GURBA recommends for dyspepsia a compound pill made up of sour pomegranate seeds 36 *mashas*, *pipli* 18 *mashas*, black pepper 5 *mashas*, *Javakhara* 4 *mashas* and sugar sufficient quantity to make a pill mass. The dose is 30 to 45 grains twice daily. The pomegranate *rind* is valuable in diarrhoea and the advanced stages of dysentery, usually administered in *decoction* (1 in 10) together with a small quantity of bruised cloves or cinnamon; of this, when cold the dose is 1 to 2 ounces 3 or 4 times a day; in obstinate cases five drops of laudanum may be added to each dose. A *compound decoction* made of the rind of this fruit, rind of mangostin fruit and *Kurchi* bark, each 1 ounce and water 1 pint, is also an efficacious remedy for dysentery in doses of 1 ounce three times a day. Chakradatta recommends a *compound powder* named *Dadimastaka* for chronic bowel complaints; it is made thus :—Take of pomegranate rind one seer, bamboomanna two tolas, cardamom, cinnamon, *tejapatra* and flowers of Mesua ferrea, each 4 tolas, *Ajowan*, coriander, cumin seeds, long pepper root, long pepper, black pepper and ginger, each 8 tolas, sugar 1 seer. Powder the ingredients and mix ; dose is about 1 drachm. The *powdered rind* is also similarly efficacious. The rind of the fruit

with a belleric myrobalan is slowly chewed in the mouth in cases of chronic bronchitis and bronchorrhoea with much benefit. Powder of dried rind ½ ounce, prepared chalk 1 ounce, and tincture of myrrh ½ a drachm all mixed together form an excellent astringent dentifrice. The *root-bark* especially the *fresh* one or the sliced bark is a reliable remedy in the form of concentrated decoction (1 in 20) with a little cloves or other aromatic added, for the expulsion of taenia or tape-worm. It should be given fasting early in the morning in doses of 2 ounces at intervals of an hour or two, the last dose being followed by an aperient, and the worm is said to be expelled within 12 hours. The decoction is found successful also in the tuberculous disease of the children known as wasting disease or Consumption. The remedy has also been found beneficial in some diseases of adults notably chronic feverishness and debility due to malaria or splenic enlargement, though resisting quinine and other usual treatment—(Tukina). A *fluid extract* of the fresh bark in doses of half an ounce, repeated, is equally effectual as anthelmintic. The alkaloid, *pelletierine* and its compounds—tannates and sulphates of the alkaloid, have also been used; the most suitable being the tannate, which is very difficult to dissolve and therefore not readily absorbed; it is administered in doses of 3 to 8 grains fasting and then followed by a purgative. *Juice* of the green fruit in combination with cloves ginger and galls is given in honey in piles. The *acid saccharine juice* of the fresh fruit is much esteemed in dyspepsia and as a cooling beverage in fevers and sickness quenching thirst etc. The *dried flowers* known as "goolnar" are used in a compound powder composed of these dried

flowers 1 drachm, gum Arabic 1 drachm, Dragon's blood (Sanguin Draconis) 2 drs, and opium 8 grains. This is useful in haematuria, haemorrhoidal flux, haemoptysis, dysentery etc. Dose is 10 to 15 grains. The *flower buds* powdered and given in doses of 4 to 5 grains are useful in bronchitis. The fresh unexpanded flower buds pounded and mixed with powdered cardamom seeds, poppy seeds and mastiche and made into a linctus with syrup forms a specific remedy in the treatment of chronic diarrhoea of children and chronic dysentery.—(Tukina). *Juice of the flowers* with the juice of *durva* (Cynodon Dactylon) equal parts is given to stop bleeding from the nose. In relaxed sorethroat the above-described decoction with the addition of alum (a drachm to a pint of decoction) is a very useful gargle, and also a good astringent injection in vaginal and uterine discharges such as leucorrhoea, passive haemorrhages, ulcers of the uterus and of the rectum; in these cases the cloves or cinnamon should be omitted.

795. **Putranjiva Roxburghii** or Nageia Putranjiva of the genus Euphorbiaceae (*Sans.*—Putra-jiva, Garbhakara. *Hind. & Ben.*—Jaiaputa; Joti. *Mah.*—Jivan-putr; Puta-jan. *Tam.*—Karupali. *Tel.*—Kadrajuvi; Mahaputra jiviyarala. *Mal.*—Pongalam) is found wild and cultivated throughout tropical India. The *leaves* and *stones of the fruit* are given in decoction in colds and fevers—(Stewart). The *nuts* are hung round the neck of children as a charm to keep them in good health. They are believed to be "productive of impregnation and medicinal properties are also attributed to them; they are sometimes given internally in colds on account of their supposed heating properties"—(Pharm. Indica.). The

seeds yield a rather turbid oil of an olive-brown color. They give about 28.86 p. c., of kernels or the kernels yield to ether 42. 9 p. c., of a clear light yellow oil—(Hooper).

796. **Pygeum Persica** or Amygdalus Persica of the genus Rosaceae (*Eng.*—Peach) is a native of Persia, cultivated in the Deccan. When ripe it contains much sugar and gum and is a very wholesome fruit. It is aperient and easily digestible. The kernels of the seeds are a good substitute for bitter almonds. Decoction of the leaves is laxative, anthelmintic and sedative. Peach-brandy is distilled from the fruit.

Pyrethri Radix—See Anacyclus Pyrethrum.

797. **Pyrethrum Indicum** is of the genus Compositae (*Pers.*—Bozidana. *Hind.* & *Bom.*—Mitha akalakara. *Eng.*—Sweet Pellitory). The *root* is devoid of the acridity of the true pellitory root, though it resembles closely *akalakara.* Its taste is sweet. In action it is aphrodisiac, tonic, alterative and deobstruent. It is useful in rheumatism, gout and enlargement of the liver and spleen. It as also said to be an anthelmintic and abortifacient. It is employed generally in the form of *paste* and *confection.*

Pyrus Communis (*Sans.*—Amritaphala. *Hind.*—Nashpati. *Punj.*—Nak.)—See Psidium Guyava.

798. **Pyrus Cydonia** of the genus Rosaceae (*Eng.*—the Quince. *Hind.*—Bihi. *Duk.*—Behidana. *Cash.*—Bamtsunt; Bamsulu. *Arab.*—Hubbus sapharjala. *Pers.*—Tukhm-e-abi. *Tam.*—Shimai-madala virai) is cultivated in North-west India. There are three kinds.—sweet, sour and subacid. The sweet and subacid quinces are commonly eaten as a fruit, are considered cephalic

cardiac, demulcent, restorative and tonic. The *leaves*, *buds* and *bark* of the tree are domestic remedies among the Arabs on account of their astringent properties. The *seeds* are a popular remedy in gonorrhoea and in dysentery with inflammation of the mucous membrane which their mucilage protects from irritating fecal matter; the mucilage is also prescribed in coughs, sore-throat etc. Externally it is applied to scalds, burns and blisters.—(Dymock). The seed-coat imparts to boiling water a peculiar kind of mucilage cydonin. It is used as a hair dressing. The *dried fruit* is used as a refrigerant.—(Watt). Fresh seeds contain 15·3 p. c., of oil of a yellow color and of a faint odour of oil of almonds. The mucilage contained in the epithelial covering consists of a compound of gum and mucilage.

799. Pyrus Malus (*Sans.*—Sebhaphala; Shivinthaka. *Eng.*—Apple. *Urdu.*—Sev. *Hind. Bom. &Guz.*—Sufferjang) is cultivated in North-west India. The fruit apple consists of much water (80 p. c.), vegetable fibre, albumen, sugar, gum, chlorophyll, malic acid and lime. German chemists state that the apple contains a large quantity of phosphates. The Scandinavians called it the "Food of the Gods" and believed it possessed virtue to renew both mind and body. Apples are good for those disposed to gout and sluggish liver, and those who follow a sedentary life. Two or three eaten at night—uncooked or baked—correct constipation. Rotten apples used as a *poultice* is an old Lincolnshire remedy for sore eyes. The *juice* of apples without sugar will often reduce acidity of the stomach, becoming changed into alkaline carbonates, and thus correcting sour fermentation. It is stated that in

countries where unsweetened cider is used as a common beverage, stone or calculus is unknown. It may therefore be fairly surmised that the habitual use of natural unsweetened cider keeps in solution matter which is otherwise liable to be separated in a solid form by the kidneys. How much better and more valuable the fresh ripe fruit must be! It is said that apples are a good substitute for alcohol; that those who eat apples do not drink whisky and *vice versa*! Its *juice* is valuable as a blood purifier. The organic acids such as malic acid &c., contained in the fruit become alkaline carbonates in the blood and so help to neutralise the acidity of the blood due to uric acid; they render the urates clogging the system, more soluble and thus assist materially in getting rid of them from the system. Therefore the unfermented juice of the apple is a useful remedy in gouty and rheumatic disorders, lumbago, sciatica, neuralgia, neuritis, asthma and gouty eczema. Apples may also be eaten raw, ripe or baked or stewed. *Ripe sweet apples* may be taken raw if properly masticated in dyspepsia; if not they may be taken scraped. In weak digestive power, they are taken baked or stewed. From one to two or even three pounds per day are taken. They are a natural antidote to most forms of biliousness. Many sick headaches are relieved or cured by adopting the apple-cure for a few days after first cleansing the bowels with a soap enema. The acids contained in the fruit act as a mild germicide and thus prevent auto-toxamia which accompanies constipation, owing to the absorption into the blood of the poisonous matter containing in the long retained waste matter. Apples therefore have a healing effect also on chronic

catarrh of the mouth and throat caused by the presence and activity of germs. For the sick and convalescent juicy baked apple, sweetened if necessary with a little minced dates is an ideal appetiser.

800. Quassia Excelsa or Q. Amara is a small branching tree of the genus Simarubaceae (*Eng.*—Quassia wood. *Vernaculars.*—Koshia) found in Jamaica. Surinum Quassia obtained from Quassia Amara was formerly used for medicinal purposes, but it has now been replaced by Jamaica Quassia. The wood is so called after Quassi, Coissi or Quass, a Negro of Surinum who first discovered its tonic and febrifuge properties and used it in malignant fevers so prevalent in the moist tropical countries. The quassia wood is in the form of yellowish white shavings, chips, or raspings or large dense billets. Its constituents are (1) *quassin*—a mixture of *a*-picrasmin and *b*-picrasmin bitter principles, (2) a volatile oil. Quassin when heated melts like resin; both alkalies and acids increase its solubility in water. Quassia is a bitter tonic without astringency; and as it contains no tannin it can be ordered with iron preparations. It invigorates the digestive organs. It is most suitable in dyspepsia and anorexia. A strong *decoction* of quassia is a good poison for flies and fish; similarly it actsin various diseased conditions of the blood destroying unhealthy organisms and acting as a poison to insects and the lower forms of animal life. When injected into the rectum a strong *infusion* will destroy thread-worms. The infusion of the B. P. (1 in 240 of boiling water) is given in dyspepsia, loss of appetite and debility after fevers etc. The strength of the *cold infusion* is 1 in 120; and the dose of both is ½ to 1 ounce. It may be used also in

the form of *tincture* (1 in 10) in doses of ½ to 1 drachm. It is given in bilious fevers, together with alkaline salts in gout with aromatics and ginger; in hysteria with camphor and tincture of valerian; in dyspepsia with sulphate of zinc or iron or with mineral acids. The dose is from 1 to 4 ounces.

801. **Quercus Infectoria** belonging to the genus Cupuliferae (*Sans. Ben. & Mah.*—Majuphala. *Eng.*—Oak Galls; Magic nuts. *Hind.*—Muphal. *Bom. Guz. & Kon.*—Maiphala. *Pers.*—Mazu. *Tel.*—Mashikaya. *Tam.*—Machakai. *Can.*—Machikai. *Burm.*—Pinza-kani-si. *Malay.*—Manjakani) is a tree bearing the oak galls of commerce, a native of Greece, Asia Minor extending to Persia; the galls are imported into India. They result from the puncture and deposit of an egg or eggs of an insect Cynips Gallae tinctoria. They are darker in colour and known as the " black " or " blue " the " white " or perforated galls; these being lighter in colour are inferior in quality. Galls have been much employed in India by magicians. The principal chemical constituent of galls is tannin or tannic acid (Gallo-tannic acid) 50 to 60 or 70 per cent, and about 3 per cent of gallic acid. The *galls* constitute a powerful vegetable astringent. They are used as *powder* in doses of 10 to 20 grains, or in the form of *infusion* or *decoction* (1 in 13). Decoction is usually employed as an astringent wash, gargle, enema or injection. It may also be given internally in doses of 1 to 2 ounces thrice daily or oftener; powder is given in diarrhoea, gleet and longstanding gonorrhoea, thrice daily; also in leucorrhoea and other vaginal discharges in addition to the injections of the

decoction at the same time. In the advanced stages of dysentery the decoction seems to answer better, given in doses of 1½ to 2 ounces thrice daily with the addition of opium, (10 to 20 minims of laudanum) to each dose for adults only. In prolapsus (descent) of the rectum the daily use of an enema of decoction of galls proves useful and in the case of children a pad saturated with the decoction may be kept over the parts after the protruded bowel has been returned. The same treatment is applicable in cases of prolapsus of the uterus, the decoction being used as a vaginal injection. As a gargle in relaxed sore throat and enlargement of the tonsils the decoction of galls is used with the addition of 7 grains of alum and 1½ drachms of honey to every ounce of the decoction. An *ointment* of the powdered galls (1 in 4 or 5 of ghee or benzoated lard) is applied to haemorrhoids unattended by increased heat or inflammation; if there is much pain opium (1 in 16 parts of the ointment) may be added. It should be applied twice daily. *Enemas* of the decoctions may also be used with benefit. Tannic and Gallic acids which the galls contain are valuable styptics and astringents, useful in all internal haemorrhages, in excessive secretions from different parts of the body and for cutting short local inflammations as in various forms of sore throats, nasal catarrh and gonorrhoea. Tannic acid is used in poisoning by nux vomica, datura, opium and aconite root, after the stomach has been emptied by emetics (the first thing to be done); decoction of galls in doses of 3 to 4 ounces is given every quarter hour for five or six times in succession.

802. Quinetum is an amorphous powder prepared

from the red cinchona bark grown at the Government cinchona plantations in India. Quinetum contains all the febrifugal alkaloids of the Cinchona succirubra *viz.*—quinine 25, cinchonidine 50, and cinchonine 20 p. c. It is a valuable febrifuge, but takes a longer time to act. Although it has the same apyretic effect as quinine, yet it is less powerful; larger doses are, therefore, required at longer intervals before the paroxysms. It has its disadvantages, however, being apt to create nausea, vomiting, with a burning sensation at the pit of the stomach, extending in some instances to the throat and occasionally diarrhoea. Like quinine, if given in sufficient doses to produce its specific effect, it gives rise to headache, singing in the ears, giddiness and other symptoms included under the term "quinism"; but all these pass away on the discontinuance of the remedy, leaving no after-ill-effects. It is, in fact, a thoroughly safe and efficacious remedy in ordinary simple intermittents, in chronic cases and as a tonic, although not so effective in the severer forms and remittent fevers as quinine. The dose is from 5 to 10 grains twice or thrice daily during the intermission or before the paroxysms. Fresh lime-juice is recommended as an eligible vehicle for its proper use. Or it is administered in the form of pills with an effervescing mixture, with the object of obviating the ill effects, such as the irritability of the stomach which it frequently produces. In debility after fevers it is recommended as a tonic given in small doses. In enlargement of the spleen it is also recommended in combination with sulphate of iron. In neuralgia, face-ache, Tic-Douloureux (neuralgia of the head or face) recurring

periodically it should be given in full doses (10 grains) thrice daily for adults.

803. Quinine is an alkaloid which exists in the cinchona bark, and which is extracted by a chemical process and, being afterwards combined with sulphuric acid, forms the crystallized disulphate of quinia or quinine as it is commonly called. For internal administration this is decidedly much superior to cinchona or quinetum. As a tonic and antiperiodic it stands unrivalled; in agues and intermittent fevers of all kinds it is indispensable; in neuralgic affections and those arising from debility its good effect is generally marked and decided. It has been recommended as an antipyretic remedy in typhoid, typhus small-pox, pneumonia and acute rheumatism. It has also been employed with marked benefit in various septic states and in pyaemia and all exhausting suppurative conditions. The theory that it acts beneficially in disease by destroying minute organisms has led to its advocacy in whooping cough, intermittent haematuria, hay fever, chronic suppurative bronchitis, etc. The common dose is one or two grains three times a day; it is best given in solution in dilute sulphuric or hydrochloric acid or citric acid. It is often given with some bitter infusion such as gentian or calumba; sometimes in infusion of roses the acid of which readily dissolves it. In regard to iutramuscular injections of Quinine Majors H. W. Acton and R. N. Chopra, I.M.S. have found ("Practical Medicine") that the bihydrochlorides of quinine, quinidine, cinchonidine and cinchonine when injected in the usual strengths into the muscles of rabbits cause oedema. irritation and necrosis of the

tissues. Contrary to the usual belief, there was little difference in the action of cinchonine as compared with quinine. They go so far as to say that the injection of these alkaloidal salts into the muscles of man should be considered as malpraxis, and that "there is only one method of administering the cinchona alkaloids and that is by the mouth". "Very rarely in grave cases, quinine base should be injected intravenously". But the editor of "Practical Medicine" says that this method should be reserved for cases in which there are good and sufficient reasons, such as persistent vomiting or failure to absorb the drugs. The proportion of cases in which serious consequences follow in practice from intramuscular injections is small; and that the method may be reserved for those cases in which there is a real necessity for the procedure.

804. **Quisqualis Indica**; Q. Villosa of the Natural Order Combretaceae (*Eng.*—Rangoon creeper; Chinese honey-suckle. *Hind.* & *Duk.*—Rangoon-ki-bel. *Mah.*—Vilati Chemeli. *Tam.*—Irangun Malli. *Tel.*—Rangunu malli chettu. *Malay.*—Sunsung) is a creeper met with in Malaya and India, the *seeds* of which have anthelmintic properties and are useful in cases of round worms. Four or five seeds are crushed and made into an electuary with honey; this is given to children to cause expulsion of the worms. Larger doses are apt to cause spasms and other ill effects in some constitutions. The *ripe seeds* are roasted and given in diarrhoea and fever. The *leaves* are given in a *compound decoction* for flatulent distension of the abdomen. The *fruits* are found to contain a fixed oil 15 p. c., of a yellow color and a peculiar odour, a sugary

substance similar to levulose and an organic acid similar to cathartic acid. The seeds yield an alkaline ash.

Quomoclit Vulgaris—See Ipomoea Quomoclit.

805. Randia Dumetorium, belonging to genus Rubiaceae (*Sans.*—Madana. *Eng.*—Emetic nut, *Hind.* and *Ben.*—Mainaphal. *Duk.*—Mendaphal. *Arab.*—Kousala. *Punj.*—Mindukolla. *Bom.* & *Mah.*—Gelaphala, *Guz.*—Mindhala. *Pers.*—Zuz-ul-Kuch. *Tel.*—Manda. *Tam.*—Maruk-kallan-kai; Poongarai. *Can.*—Mangari-kai. *Mal.*—Manga-kai) is a small thorny tree found in waste places and jungles all over India. The *rind* and *fruit* have useful emetic, diaphoretic and antispasmodic properties. The *bark* is a sedative and nervine calmative; it is administered internally and applied externally in the form of a paste in rheumatism and to relieve pain of bruises and bone-aches during fevers and to disperse abscesses. It also acts as an astringent and is useful in diarrhoea and dysentery. It is also used as an emetic. But the *rind* and *pulp* of the fruit are generally used to produce emesis. The pulp of one ripe fruit is usually sufficient for the purpose. Or the contents of two or three nuts, bruised macerated for 10 to 15 minutes in 3 or 4 ounces of water, rubbed and strained through cloth form a draught sufficient to produce nausea and vomiting in about ten minutes. The emesis is promoted by the administration of warm water—(Moideen Sheriff). The active principle of the fruit is discovered to be saponin and valerianic acids; also wax, resin and coloring matter are found to be present. Preferably the pulp may be removed, dried and powdered and kept ready for use, the dose being 15 to 60 grains as an emetic and 5 to 10 grains

as a nauseant expectorant and diaphoretic. The *fruit* is sometimes used to procure abortion. It has the power of intoxicating fishes in the same way as *Kakamari*, for which purpose a bruised fruit is thrown into the water It is a useful substitute for ipecacuanha, and described by Sanskrit writers as the best or safest of emetics. It is also used in combination with other medicines as for instance with what is called *Pancha Kashaya*, which is made thus.—Take of Justica Adhatoda, Acorus Calamus, *nim* bark, leaves of Trichosanthes dioica and bark of Aglaia Roxburghiana equal parts, half a seer in all, water 8 seers; boil them together till reduced to one-fourth. This decoction is given with the addition of the pulp of Randia dumetorum for causing emesis. A compound powder called *Madanadhivamana* is said to be an efficient expectorant in doses of 5 to 15 grains, and emetic in 20 to 60 grain-doses, useful in bronchitis and chest affections; as emetic in colic, headache, orchitis, indigestion etc. It was recently tested by Dr. Koman in cases of acute bronchitis and asthma and found very beneficial—(Indigenous Drugs Report, Madras.) It is composed of Randia Dumetorm, Calotropis gigentia and Glycerrhiza glabra,

806. **Randia Longifolia** is a species found in Bengal, the bark of which is used in intermittent fever.

807. **Randia Uliginosa** (*Sans.*—Pindhaluka. *Ben.*—Pindalu. *Hind.*—Pedalu. *Guz.*—Pinglu. *Mah.*—Pendhari. *Tam.*—Vagata. *Tel.*—Guaku; Peddamrangu) is met with in moist places in India. The *unripe fruit* is used as astringent. Roasted in hot ashes they are used in diarrhœa and dysentery, their stones and seeds being

rejected. The *root* boiled in ghee is also sometimes given in similar cases.

808. **Rauwolfia Serpentina** is a climbing shrub of the genus Apocynaceae (*Sans.*—Chandrika; Sarpagandha. *Hind.*—Chota-chand. *Ben.*—Chandra. *Tel.*—Patala-gandhi. *Bom.*—Harkai. *Tam.*—Chivan melpodi. *Mal.*—Chivan Avelpori. *Can.*—Sutranabi) found in the tropical Himalaya and at moderate altitudes in Sikkim, Assam, Pegu and Tenasserim. The *root* contains an alkaloid "Ophioxylin" an orange-colored crystalline principle, resin, starch and wax. The ash contains iron and manganese. The *root* is a bitter tonic. It is long known as an antidote to the bites of poisonous reptiles and stings of insects. It seems to act also as febrifuge. The *decoction* of the root is employed to increase uterine contractions. The *juice of leaves* is instilled into eyes as a remedy for the opacities of the cornea. The root is a valuable remedy in painful affections of the bowels; with Aristolochia Indica it is given in cholera, in colic one part of the root with two parts of the root of Holarrhena antidysenterica and three parts of Jatropha curcas is given in milk. In fever the root with Andrographis paniculata, ginger and black salt is used. The dose of the combined drugs is from 1 to 2 tolas.

809. **Ranunculus Scleratus**; R. Indicus (*Kumaon.*—Shim. *Tirhut.*—Polica. *Pers.*—Kabikaj. *Arab.*—Kaf-es-saba) is a glabrous annual herb found on the river banks in Bengal and North India; marshes of Peshawar, warm valleys of the Himalayas. The whole plant possesses a very powerful principle. The *fresh plant* is poisonous if taken internally. The *bruised leaves*

applied externally raise blisters; may be used to keep open sores caused by vesication or by other means.

810. **Raphanus Sativus** is an annual edible herb of the genus Cruciferae (*Sans.*—Moolaka. *Eng.*—Garden Radish; Long podded Radish. *Fr.*—Raifort cultive; Rave. *Ger.*—Rubenrettig. *Sind.*—Muro. *Ben.*—Mula. *Bom.* & *Mah.*—Mula; Mulabeeja. *Hind.*—Muli. *Pers.*—Turbe. *Arab.*—Phujal. *Tel. Tam.* & *Can.*—Mullangi. *Mal.*—Kankapal. *Kon.*—Mulo) cultivated throughout in the plains for culinary purposes. The *seeds* and *root* contain a fixed oil, a sulphuretted volatile oil resembling mustard seed oil. The *oil* contains sulphur and phosphoric acid. The *seeds* and *leaves* are diuretic, laxative and lithontriptic. The seeds are believed to have also emmenagogue properties. In one drachm doses the seeds are useful in gonorrhoea. The *root* is a reputed medicine for piles and gastrodynic pains; also given in urinary and syphilitic complaints, relieve dysuria and strangury. The *juice* of the fresh root in 1½ to 3 ounce doses is given and repeated as often as necessary. It is also considered powerfully antiscorbutic. It is an important article of vegetable food. Eaten before a meal the radish improves appetite and increases the digestive power. The dose of the juice of the leaves is ½ to 1 drachm and of the infusion of seeds (1 in 10) is 4 to 6 drs.

Rhamnus Jujuba—See Zizyphus Jujuba.

811. **Rhamnus Purpureus** of Rhamneae genus (*Punj.*—Balsinjal; Karu; Mimarira; Kinji) is of the Western Himalaya from Murree to Kumaon. Its *fruit* is used as a purgative.

812. Rhamnus Triqueber is another species met with in the Punjab and Western Himalaya known as *Rangret* with properties similar to R. Wightii.

813. Rhamnus Wightii of the same genus (*Bom.*—Raktarohida; Raktazoar) is found on the highest hills of the Koncan, southwards to the Nilgiris and on the Western Ghauts from Mahableshvar southwards. The *bark* is reputed to be tonic, astringent and deobstruent.

814. Rhazia Stricta of the genus Apocynaceae (*Hind.*—Sunwar. *Punj.*—Wena; Gandera. *Sind.*—Sehar. *Pushtu.*—Vargalum) is found in Sind, Salt range and Peshawar. The *juice of the leaves* is given with milk to children for eruptions and an *infusion* of them is very useful for sore throat, low fevers and general debility as a good cooling bitter tonic. The leaves contain a large quantity of alkaloids one of which is a volatile and has the odour of conine the alkaloid of hemlock. The *fruits* and *leaves* are considered efficacious in boils and eruptions. In Afghanistan the *root*, *stems*, *leaves* and *flowers* are dried and used in *infusion* for the treatment of syphilis in all its stages and of chronic rheumatism, old joint affections and pains of every kind (Duthie in Watt).

815. Rheum Emodi; R. Acuminatum; R. Speciforme; R. Webbianum; R. Moorcroftianum; R. Australe, of the genus Polygonaceae (*Sans.*—Amlavetasa. *Eng.*—Himalayan rhubarb. *Hind.*—Hindi revand-chini. *Fr.*—Rhubarb de Perse. *Ger.*—Rhabarber. *Ben.*—Bangla revanchini. *Bom. Mah. & Guz.*—Ladaki-revanda-chini. *Pers.*—Tursak. *Tel.*—Nattu ireval-chini. *Tam.*—Variyattu. *Can.*—Reval-chini) are Himalayan species of rhubarb

found wild at altitudes of 11,000 to 12,000 feet, and in Kashmir, Nepal, Sikkim and Bhutan. The rhubarb of commerce known as Chinese or East Indian is attributed to R. Officinale and R. Palmatum, growing in the adjacent territory of South-eastern Tibet and North-western China. The *root* of the Indian drug is darker, inferior in aroma and coarser and untrimmed compared with the commercial variety, while the powder is dull brownish-yellow instead of bright yellow. Rhubarb root of commerce contains a large proportion of *Chrysophanic acid*, sometimes called *Chrysophan*, an allied substance Emodin, a tannin named Rheo-tannic-acid, several resins, an albuminoid principle, mucilage extractives, tannic and gallic acids, sugar, starch, pectin, lignin, calcium oxalate and various inorganic salts. Dr. H. N. Ghosh who has tried the value of the drug in 36 cases states that it is "a good laxative, less liable to gripe than B. P. rhubarb. It never produced sickness in any one"—(Ind. Drugs Committee Report, Calcutta). *Rhubarb* is stomachic, tonic and cathartic so that its secondary effect is to confine the bowels; hence it is well fitted for use in simple diarrhoea, but not in constipation or any affection in which a continuous aperient action is necessary; it is not fitted for inflammatory or febrile cases although it seldom acts as an irritant. Its stimulating combined with its aperient properties render it valuable in atonic dyspepsia. Generally speaking it suits children and aged persons best. Combined with ginger, it may be given in the form of *pill* in cases where the bowels are sluggish. The ordinary dose of the *powder* is from 5 to 20 grains. Some persons chew the root, and to them this is a very good way of

taking it. Rhubarb forms an important ingredient of a large variety of compounds. Mixed with Grey Powder it is an excellent remedy for irritation of the bowels, common among children when teething and in chronic dysentery, duodenal catarrh or catarrh of the biliary ducts with jaundice and in certain skin diseases. For the errors in the diet of children or for the diarrhoea set up by undigested food it is best given combined with sodium bicarbonate or magnesia. It communicates a deep tinge to the urine, which need not cause alarm and misconception. Rhubarb like sorrel and tomato, should never be eaten by those who have a tendency to gout, rheumatism epilepsy or any uric acid disease, owing to the oxalic acid it contains.

816. **Rhinacanthus Communis** is a small shrub belonging to Acanthaceae (*Sans.*—Yuthikapurni. *Hind.*—Palak-juhi. *Ben.*—Jui-pana. *Bom.* and *Mah.*—Gajakarni. *Tel. Tam. & Can.*—Negamuli. *Mal.*—Purukolli) cultivated in many parts of West and South India and in Ceylon. The *leaves* and *root* are regarded to act as antidotes to the bites of poisonous snakes. The active principle is a red resinous substance named *Rhinacanthin* which is believed to be allied to Chrysophanic and frangulic acids. The *root* powdered and made into a *paste* with lime-juice is applied with much benefit in eczema and ring-worm, especially that variety which is known as *Dhobie itch.*

817. **Rhododendron Anthopogoea** of the genus Ericaceae (*Jhelum.*—Nichni; Rattankat; Nera. *Cash.*—Tazaktsum; Talisfar.) is met with on the alpine Himalaya from Kashmir to Bhutan. The *leaves* are aromatic and stimulant and their smoke is considered useful in some

diseases. The leaves are administered as errhine to produce sneezing. "This is one of the species which is thought to excite the headache and nausea which attends ascents to the high elevations of the Eastern Himalaya.—(Sir J. D. Hook). The other species are R. Setosum and R. Lepidotum".—(Honningberger).

818. **Rhododendron Campanulatem** is another species of the same genus (*Cash.*—Gagger. *Kumaon.*—Chimul. *Himalaya.*—Surngar; Shinwala. *Nepal.*—Cherialu) and of the Alpine Himalaya from Cashmere to Bhutan. The *leaves* are poisonous to goats. Mixed with tobacco it is made into a medicinal stuff, useful in colds and hemicrania. They are also used in chronic rheumatism, syphilis and sciatica. The *dried twigs* and wood are used in Nepal as a medicine in phthisis and chronic fevers.—(Watt).

819. **Rhus Coriaria** is a species of Anacardiaceae (*Eng.*—Sumach. *Pers.*—Samaka. *Arab.*—Timtima *Hind.*—Tatraka) the *fruit* of which is a powerful astringent; also an acid and a styptic tonic. It is said to be useful in dysentery. It checks bilious diarrhoea, allays vomiting and purging of blood and checks leucorrhoea and diuresis. It is generally used in the form of *powder* or *extract*; dose of the powder is 20 to 30 grains. A gargle prepared of fruits is used in catarrhal affections of the pharynx. Locally the *paste* mixed with charcoal powder is applied to unhealthy ulcers and suppurating piles.

Rhus Kakrasingi—See Pistacia Integrifolia.

Rhus Odina—See Odina Wodier.

820. RHUS SUCCEDANEA; R. Acuminata.

(*N.O.*—ANACARDIACEAE).

Sans.—Karkatashringi. *Eng.*—The Galls. *Hind. Guz.* & *Mah.*—Kakadsingi. *Cash.* & *Ben.*—Kakrasringi. *Tel.*—Kakarashingi. *Tam.*—Kakkata shingi.

The galls are horn-like excrescences caused by insects on the branches of Rhus Succedanea. They are hard, hollow, thin-walled, generally cylindrical, tapering to either extremity.

Habitat.—Himalayan mountain ranges on the north-west from Kashmir to Simla.

Parts Used.—The galls.

Constituents.—Tannin 75 p. c.

Action.—Astringent, tonic, expectorant and stimulant. The gall is said to be also a cholagogue.

Uses.—Galls are useful in cough, phthisis, asthma, fever, want of appetite and irritability of stomach. Dose is about 20 grains. This medicine is combined with demulcents. It is much used in combination with other astringents in diarrhoea. The following are a few useful combinations of the drug.—(1) Take of *Karkatashringi*, root of Clerodendron siphonanthus, raisins, ginger, long pepper and Curcuma zedoaria equal parts, powder and mix. Dose is about 30 grains with treacle or honey, in dry cough.—(Chakradatta). (2) In catarrhal fever with difficulty of breathing a powder composed of equal parts of *Karkatasringi*, bark of Myrica sapida and long pepper is recommended in doses of about a drachm with honey.—(Bhavaprakasha). (3) *Sringyadi Churna.*—Take of *Karkatasringi*, *atis* and long pepper, equal parts; powder

and make into a linctus with honey; dose is 1 to 5 grains of the powder. This is much esteemed as a cough linctus for children.—(Sharangadhara). This is also useful in infantile diarrhoea and gastro-intestinal troubles during teething. This was recently tested by Dr. Koman; he says.— 'This powder was administered to infants suffering from diarrhoea resulting from teething and other causes and to infants with bronchial troubles. Many of the little ones were very much benefitted by it"—(Indigenous Drugs Report, Madras). Externally a *paste* of the galls is recommended as application in psoriasis. Galls are used in the form of *decoction* or *lotion* as gargle to suppress haemorrhage from the gums; also used to suppress bleeding from the nose, discharges from mucous membranes such as gleet, leucorrhoea etc.

821. **Ribes Nigrum** (*Eng.*—Currants) is of the genus Saxifrageae. These and gooseberries are herbs of mountainous and temperate regions of Western India. As currants contain salicylic acid they are indicated in rheumatism. The virtue of *black currant jelly* as a remedy for quincy and sore throat have long been familiar. The white and red currants contain similar properties. They contain malic and citric acids. The jelly made from them is excellent in fevers. The *fruit* relieves constipation and purifies the blood. Black currant jelly is useful in colds. It is laxative and cooling. A teaspoonful two or three times a day may be given with advantage to children with thrush.

822. RICINIS COMMUNIS; R. Dicoccus.

(*N. O.*—EUPHORBIACEAE.)

Sans.—Erandam ; Vatari. *Eng.*—Castor-oil plant. *Fr.*—Ricin. *Ger.*—Ricinus : Gemeiner Wunderbaum. *Hind. & Punj*—Arand. *Arab.*—Khirva. *Pers.*—Bedanjir. *Ben.*—Bheranda; Sadabherenda. *Assam.*—Eri. *Bom. Guz.* and *Mah.*—Erandi. *Uriya* —Gab. *C. P.*—Grudi. *Tel.*—Eramudapu. *Tam.*—Chittamani. *Can.*—Haralu. *Mal.*—Chittamanaku. *Cing.*—Endaru. *Burm* —Kesusi. *Malay.*—Miniak-jarah.

Habitat.—This plant is common and apparently quite wild in the jungles in India. It is cultivated throughout India, chiefly in the Madras, Bengal and Bombay Presidencies. Two varieties of this plant are known:— (1) A perennial bushy plant with large red seeds which yield about 40 p. c. of oil; and (2) a much smaller annual shrub with small grey seeds having brown spots and yielding 37 per cent of oil.

Parts used:—The oil, leaves, roots and seeds.

Constituents:—Fixed oil 45 p. c. soluble in alcohol; proteids 20 p. c. starch, mucilage, sugar & ash 10 p. c. The oil contains:—(1) ricinolein which is a mixture of glycerides of ricinoleic and isoricinoleic acids—a viscid oil, the purgative principle; (2) Tristearin, (3) glyceride of dihydroxystearic acid and (4) Ricin, an albuminoid poisonous body.

Action:—The oil is non-irritant purgative; when it reaches the duodenum it is decomposed by the pancreatic juice into recinoleic acid which irritates the bowels, stimulates the intestinal glands and the muscular coat and causes purgation. It acts in 4 to 5 hours causing liquid stools without pain or griping and has a sedative effect.

on the intestines. With glycerine the effects of the oil are increased. Recinoleic acid is absorbed into the blood and tissues and is excreted with the human milk, which, when sucked imparts to the child its purgative action. Recinin is a violent irritant of the intestines, kidneys and bladder. It gives rise to inflammation of the bile duct and very often to jaundice and to dysuria. The root-bark and leaves of this plant have also purgative properties. The leaves are used as galactagogue.

Uses:—Castor oil has been put to many and varied uses *e. g*;-illumination, and lubrication of all sorts of machinery, in the making of soaps, candles, pomatum, in paper-making, for leather dressing etc. It was used as an ointment by the Egyptians a thousand years B. C. and for the lighting of railroad trains in India as recently as 1895. The better and purer quality oil, clear odorless and almost colorless and known as cold-drawn castor oil, *i.e.*, drawn from the seeds by expression instead of by heat (decoction) is used for medicinal purposes. It is administered (plain or in emulsion with mucilage) in inflammatory conditions of the bowels, in the diarrhoea of childhood and often combined with opium, in simple diarrhoea of adults; it is also useful in irritable conditions of the system among debilitated persons and young children; after child-birth to the lying-in-women and before child-birth to facilitate delivery in operations for lithotomy, in peritonitis, dysentery and in inflammatory disease of the urinary organs. The usual dose is, for a child, about one teaspoonful, gradually increased according to age to two or three tablespoonfuls, which is the full dose for an adult. It is best given floating on milk, strong coffee or in dry ginger

water or omum water. In painful affections of the rectum, in piles and to prevent the patient straining at stool, castor oil in small doses is often of great service to soften the faeces and lubricate the passages. As a purgative castor oil is recommended to be taken with cow's urine or an infusion of ginger or a decoction of the combination called *dasamula*—(Chakradatta). For sore nipples, they are smeared over freely with it each time the child is removed from the breast. In constipation, it is useful as an *enema* ; two ounces of castor oil emulsified with a pint of soap-suds and water often causes a copious evacuation of the bowels. In cases where a foreign body such as a small particle of steel has become imbedded in the eye, a few drops of castor oil instilled between the lower lid and the eyeball relieve the pain and irritation, though temporarily, so also into ears if they are invaded by insects etc. It may be dropped into the eye in conjunctivitis and is especially useful for dissolving cocaine, homatropine and other alkaloids used in eye cases. It may be repeated often until medical aid is obtained for the removal of the foreign body. In case of any foreign body such as glass in the stomach castor oil in purgative doses is useful For *Peenash* (maggots in the nose) castor oil heated to concentration is sniffed into the affected nostrils. Castor oil is much praised for its efficacy in chronic articular rheumatism in which it is used in various combinations. A compound medicated oil which is composed of 10 parts of castor oil and a watery paste made of Indian madder 5, the three myrobalans (*triphala*) 5, turmeric 4, dry ginger 4 and *daruhalad* 3 parts, all boiled together to the consistence of a thick embrocation and strained is a good

application to the abdomen in colic, to the back in lumbago, to the thigh in sciatica etc. The *root* of the plant is also useful as an ingredient of various prescriptions for nervous diseases and rheumatic affections such as lumbago, pleurodynia and sciatica. In pleurodynia or pain in the sides, a *decoction of the root* is given with the addition of impure carbonate of potash.—(Sharangdhara). The *seeds* freed from impurities and rubbed into a *paste*, boiled in milk and water and the *decoction* is given in lumbago and sciatica.—(Bhavaprakash). The *leaves* warmed over a fire and applied to the breasts of women act as a galactagogue. *i. e.*, increase the secretion of milk. For this purpose a decoction 1 (in 20 to 30) is also used; the breasts are bathed with it for quarter of an hour and then the boiled leaves, in the form of a *poultice* are spread over them. Also a *fluid extract* or the *juice* of the leaves given internally increases the flow of milk. Cattle are fed with the leaves with the same object. The leaves of castor oil plant and the leaves of Phyllanthus Niruri ground together and rubbed into a bolus of the size of a small lime and administered in the mornings for three days consecutively in milk and followed on the fourth morning by a purgative like *Trivrit Churnam* is a remedy recommended for catarrhal jaundice. The leaves applied to the abdomen are said to promote menstrual discharge. They are also applied to painful joints with much benefit. In affections of the eyes a *decoction of the bark, leaves and root* of the plant in goat's milk and water is recommended for use as a wash—(Chakradatta). A *poultice* of the crushed seeds is used to promote suppuration, to mature boils and to reduce gouty and rheumatic swellings.

823. **Rivea Ornatae** of the Convolvulaceae genus (*Vern.* & *Mah:*—Phand) is met with in Bengal, from Assam to Belgaum and Mysore. In the Concan the *juice* is made with Borneo Camphor and butter into an *ointment* for pityriasis. For piles one tola of the juice with half a tola of *Babul* pods and a little sugar is given in a quarter seer of cow's milk every morning.—(Ph. Indica).

Romero Santa—See Lavandula Stoechas.

824. **Rosa Alba;** R. Indica of the genus Rosaceae, (*Sans.*—Sevati, *Hind.*—Gulchini. *Ben.*—Swet Gulab. *Eng.* Indian white rose. *Punj*—Gul-seati) are varieties cultivated in India. Flowers are large, white, pale or bluish double. The *flowers* are used as a cooling medicine in fevers, also in palpitation of the heart. The *petals* yield the precious Indian *attar* of rose which is employed to disguise the bad odour of certain ointments &c. It is said to be generative of the secretion of semen. The petals are made into *gulkand* which is a popular laxative.

825. **Rosa Centifolia** (*San.*—Satapatri. *Eng.*—the hundred leaved or Cabbage rose. *Mal.*—Pannir) is cultivated in many parts of India. The fresh fully expanded *petals* are of a sweetish bitter and faintly astringent taste and roseate odour, both readily imparted to water. They are mildly laxative. The *rose water* distilled from the flowers is employed as a vehicle for lotions, collyriums etc.

826. ROSA DAMASCENA; R. Gallica.
(*N. O.*—ROSACEAE.)

Eng.—the Damask or Persian Rose. *Hind.*—Gulabkephul *Ben.*—Golap-phul, *Bom.* & *Guz.*—Gulabnu-phul. *Mah.*—

Gulab. *Pers.*—Gulisurkh. *Tel.*—Roja-puvu. *Tam*—Gulappu; Rojappu. *Can.*—Gulabihuvu. *Mal.*—Panniruppu. *Kon*—Gulabshavante.

Habitat.—Several species and forms are cultivated in India. R. Damascena with its red double flowers is the most important; and it is cultivated in rose gardens in several places in Bengal, Cashmere, the Punjab and chiefly near Patna and Ghazipur.

Parts Used.—The flowers, flower-buds, petals, stamens, and a volatile oil (oleum Rosae), *attar* or Otto of Rose.

Constituents.—Volatile oil, fat, resin, malic, tartaric and tannic acids. Red rose petals contain an aromatic volatile oil, a glucoside quercitrin, gallic acid quercitannic acid and red coloring matter.

Action.—Mildly astringent, carminative and refrigerant.

Uses—The *petals* of the flowers are employed for the production of rose water and *attar* of roses, *Rose water* is distilled in simple stills, a thousand roses being reckoned to produce a pint-bottle of rose water. The average yield of good *attar* from a lakh of roses has been estimated at one tola weight or 192 grains, *Rose oil* or otto or *attar* of roses is freely used as perfume by the rich classes. Its distribution with *pan supari* and the sprinkling of rose water are essential functions during festive occasions, *durbars* and *pujas* in India. *Rose water* forms an agreeable vehicle much used in lotions and collyria; from the petals also a *syrup* is sometimes made, and a conserve named *gulkand* which have mild laxative properties. It is said to be most useful for sore-throat or enlarged tonsils; also

fattening to women and old people. The petals are cooling and astringent and used to relieve uterine haemorrhages. Locally they are applied to cure aphthae. A *confection* made up of *gulkand* 5 tolas, anisi seeds 6 *mashas*, (70 grains) and *Sikanjbin-sirka* 2 tolas, is recommended for urticaria in *Tib-i-Unani*. The above is to be divided into two doses. The otto is seldom used medicinally except for perfuming emollients and medicinal soaps. *Rosa Gallica* is the Red or French Rose whose petals are slightly tonic and astringent and useful in debility. They are used for making the *infusion* which is given in 1 to 2 ounce-doses in the sweats of phthisis, and with additional acid and nitrate of potash in uterine and pulmonary haemorrhages and used topically as a gargle in throat affections which require an astringent application, *Honey of Roses* is also prepared from the leaves or fresh buds of this species which, mixed with borax, is a good application for the mouth in aphthae or thrush.

827. **Rosa Moschata**, or R. Pubescens or R. Glandulifera (*Sans.*—Kubjaka. *Eng.*—Musk-scented rose. *Hind.*—Kujai. *Ben.*—Kuja. *Fr.*—Rosier Musque. *Ger.*—Bisamrose) is a shrub and a variety indigenous to north-western India and cultivated for the production of *attar*. It is said to be aphrodisiac and beneficial in bile and burning of the skin. Root called *Rajatarini* is said to be beneficial in eye diseases.

828. **Rosebay**:—"This is not the sweet scented oleander. Rosebay grows in some valley of Mt. Everest. In Medicine, it was introduced long ago and is known as the beautiful Siberian rose. The *dried leaves* and *flower-buds* are used in medicine. It contains "Andromedotoxin" which

resembles aconitina. It is anti-rheumatic and is a highly reputed remedy for gout and rheumatism and in neuralgia of the extremities. Chronic affections of the testes as orchitis and hydrocele have also been cured by it. It is also useful in constipation, where the stools are loose but require much pressure for their expulsion. Regarding its action on Filariasis, it helps where antimony fails, and it should be at least an adjunct to antimony treatment, if it cannot displace antimony in the treatment of Filariasis. As an accessory method, a *neem* steam-bath or a steam-bath seems to me, very promising as well. A remarkable cure of filariasis, has been brought to my notice by a letter from Mr. G. A. Vaidya Raman, B. A, of Madras by adopting the *neem* steam-bath, after the best medical treatment. The patient has remained free from the disease for 30 years, as reported"—(Dr. Ashutosh Paul, Medical Practitioner, Puri).

Rottlera Aurantiaca; R. Afficuis; R. Mollis; R. Tinctoria—See Mallotus Phillipinensis.

Rottlera Indica & **R. Hooperiana**—See Trewia-Nudiflora.

829. **Rourea Santaloides** is of the genus Connaraceae (*Bom.*—Vardhara. *Mah.*—Wakeri. *Can.*—Huleshalabally. *Cing.*—Kirindi-wel). The *root* is used as a bitter tonic in rheumatism, scurvy, diabetes and pulmonary complaints. It is believed to promote the growth of a foetus in utero, the development of which has been arrested. The root is used also as an alterative and tonic for the same purposes as sarsaparilla in syphilis etc. Externally it is applied to ulcers and other skin diseases.

830. **Rubia Cordifolia**; R. Manjishta; R. Tinctoria; R. Secunda, of the genus Rubiaceae (*Sans. Bom. Mah.* & *Can.*—Manjista; Chitravalli. *Eng.*—the Indian Madder. *Ger.*—Farberwurzel. *Hind.* & *Ben.*—Manjit. *Bom.*—Itari. *Tel.*—Mandastic; Tamravalli. *Tam.*—Manditta. *Mal.*—Poont.) is a climbing plant growing in the North-West Himalaya, Nilgiris and other hilly districts of India. The roots contain resinous and extractive matter, gum, sugar, colouring matter and salts of lime. The colouring matter consists of a red crystalline principle—purpurin, a yellow principle—manjistin, garancin, alizarin (orange-red) and xanthine (yellow). The *plant* was formerly considered emmenagogue and diuretic and was much used in dropsy, paralysis, jaundice, amenorrhoea and visceral obstructions. "If taken to the extent of about 3 drachms several times daily it affects the nervous system including temporary delirium etc., with evident determination to the uterine system"—(Dr. G. Playfair—Talifii-i-Sharifii). When administered in the form of *decoction*, it tinges the blood, urine and even the bones, red. Hakims prescribe it in paralytic affections, jaundice, obstructions in the urinary passages and amenorrhoea. They prescribe an infusion of the root as a drink to women after delivery to procure copious flow of lochia. They regard the *fruit* as useful in hepatic obstructions. A *paste* made by rubbing up the *roots* with honey is a valuable application for freckles and other discoloration of the skin; also in external inflammations, ulcers and skin diseases such as pityriasis versicolor, etc. Madder and liquorice root rubbed into a *paste* with *Kanjika* is applied over fractures to reduce inflam-

mation and swelling. *Manjishthadya ghrita* is prepared with *ghee* and a paste composed of equal parts of madder, red sandalwood, and the root of Sanseviera, Zeylanica and applied to ulcers from burns—(Chakradatta).

Rubia Longifolia.—See Hygrophila Spinosa.

831. **Rubus Mollucanus** of the genus Rosaceae (*Nepal.*—Bipem kanta. *Kumaon.*—Katsol. *Lepcha*—Sufok-ji. *Eng.*—Black-cherry; Bramble.) is found in Central and Eastern Himalaya, Nepal, Sikkim, Assam, Khassia Mountains, Eastern and Western Ghats from Bombay southward. The *bark* and *leaves* are considered astringent; they contain tannin 10 p. c. The *fruit* contains malic and citric acids, pectin and albumen. The *young shoots* eaten as a salad are said to fasten loose teeth. *Root, leaves* and *fruit* are all good for diarrhoea. The fruit is considered a valuable remedy for the nocturnal micturition of children, also for dysentery as powder; and the *leaves* a powerful emmenagogue and abortifacient. *Decoction of leaves* (1 in 70 concentrated to 20) in doses of a teacupful and that of the bark in half teacupful is good for diarrhoea.

832. **Rubus Wallichii.** (*Eng.*—Raspberry) grows wild in Britain; also grows in the North West of India. Raspberry is fragrant and sub-acid. It is cooling in all feverish conditions. When fresh it allays thirst better than any fruit, except strawberry. Eaten alone it is not liable to acetous fermentation in the stomach. *Raspberry jam* is one of the most wholesome of preserves. An *infusion* of raspberry leaves is a remedy for severe laxity of the bowels, dysentery, cholera, infantum or summer complaint and passive haemorrhage from stomach etc. The raspberry contains a volatile oil, sugar,

pectin, citric and malic acids, mineral and colouring matter, some mineral salts and water.

833. **Rumex Acetosella** is a species of Polygonaceae (*Sans.*—Chutrika. *Ben.*—Chuka-palam. *Eng.*—Field-sorrel. *Fr.*—Oseille de brebis. *Ger.*—Feldsauramfer. *Hind:*—Chuk) indigenous to Northern India; its leaves contain acid oxalate of potassium and are used as an antiscorbutic and the pressed juice is refrigerant.—(Chakravarthy.)

834. **Rumex Crispus; R Vesicarius** (*Sans.*—Amla-vedasa; Shula-vedhi-chukra. *Sind.*—Bijband; Endranee. *Eng.*—Yellow dock; Sour dock. *Fr.*—Patience Vesiculeuse. *Ger.*—Blasenfruchtiger Ampfer. *Tam.*—Suk-gu-kire. *Mah.*—Chuka-bija. *Tel.*—Shukku; Kuraku. *Arab.*—Hummaz. *Mal.*—Pulivanchi. *Hind. Ben.* & *Duk.*—Chukkah. *Burm.*—Kala khen-boun. *Pers.*—Turshah) is found in Ajmere, Madras, grassy places and road sides of large towns and found semi-wild in the hills. The root contains two principles:—Rumicin and Lapathin identical with chrysophanic acid; tannin, calcium oxalate, mucilage and starch. It is used in the form of *fluid extract* in doses of 1 drachm or *decoction* of the herb (1 in 10) in doses of ½ to 1 fluid ounce or *tincture* (1 in 10) of the root in doses of 5 to 10 minims. It is in action astringent and sedative like rhubarb and sarsaparilla; given in disorders of the lymphatic and glandular system. In scurvy it is of great benefit as it contains large quantities of oxalic acid; also given in chronic skin eruptions, dyspepsia, syphilis, scrofula, hepatic disorders, laryngeal irritation and catarrh. The *root* is used as a dentifrice in spongy gums. The *juice* is

also given to allay toothache. The *seeds* are astringent and are used in chronic dysentery, in checking nausea and in promoting appetite. Externally it is used as an *epithem* to allay pain caused by bites or stings of reptiles and insects. The *seeds* are used as antidote to scorpion stings.

835. **Rumex Maritimus** or R. Acutus; R. Nepalensis are species belonging to Polygonaceae (*Hind*—Jangli-palak; Jal-palam. *Ben.*—Bun-palung. *Punj.*—Bij-band; Khattikan; Hulaobul.) is found growing in marshes in Assam, Sylhet, Cachar and Bengal. The plant has cooling properties; the *leaves* are applied to burns and the *seeds* are sold as *bijband* of the bazaars and as an aphrodisiac—(Atkinson). The tuberous *roots* of the R. Nepalensis variety are used as a substitute for rhubarb and they are given in constipation in doses of 10 to 20 grains.—(Irvine). The three substances, crystalline constituents of R. Nepalensis are:—Rumicin; Nepalin and Nepodin. In these Nepalin greatly preponderates. Rumicin is chrysophanic acid.

836. **Rumex Scutatus** (*Sans.*—Changeri. *Ben.*—Amrula. *Fr.*—Oseille rond. *Ger.*—Schildblattriger Ampfer. *Hind.*—Ambavati) is a species found in the tropics, whose succulent acidulous *leaves*, which contain potassium binoxalate, are eaten fresh or its pressed *juice* is drunk as an antiscorbutic—(Chakraverthy).

837. **Ruta Graveolens** R. Angustifolia is a plant belonging to genus Rutaceae, (*Sans*—Sadapaha. *Eng.*—the garden Rue. *Pers. Hind. Bom. Arab.* & *Guz.*—Satap. *Ben.*—Ispand. *Tel.*—Sadapaka. *Tam.*—Arvada. *Can.*—Sudabugida. *Mal.*—Aruta; Somarayen) commonly culti-

vated in Indian gardens. The *juice* of this plant is stimulant, expectorant and antispasmodic; also anthelmintic to children; in large doses, a narcotic poison. It is useful in some kinds of hysteria and in flatulent colic administered by the mouth or as *enema*. It is found useful in infantile convulsions and also bronchitis and pneumonia as a vermifuge. The *leaves* are made into a bundle and hung round children's neck in cases of worms. The leaves dried and burnt are used as fumigation in cases of catarrh and cough in children. Fresh leaves bruised and mixed with brandy are used as an external application in the first stages of paralysis. Powdered and combined with aromatics, the dried leaves are given as a remedy for dyspepsia. By distillation with water the fresh herb yields a small quantity of *volatile oil*. It is a valuable resolvent, diuretic and emmenagogue. It is found to be a powerful anaphrodisiac and abortifacient to pregnant women. Externally it acts as rubefacient. Pure oil of rue consists of 90 p. c. of methylnonylketone. Oil of rue acts as a vermicide; it is ineffective for the removal of ascarides. But the *juice* of rue is given to children as a remedy for worms, as rue is commonly regarded as anthelmintic. The *oil* is the best form of internal administration, but rue tea is a popular remedy. The dose of the powdered *leaves* is from 10 to 20 grs. The *fresh leaves* are more active and their expressed *juice* may be given in ½ drachm doses. The dose of the oil is from 1 to 5 minims rubbed up with sugar and water; of the confection, 20 to 60 grains; of the tincture from ½ to 1 drachm.

838. SACCHARUM OFFICINARUM.

(*N.O.*—GRAMINEAE).

Sans.—Ikshu; Rasalah. *Eng.*—Sugar-cane. *Fr.*—Canne a Sucre. *Ger.*—Achtes Zuckerrohr. *Ben.*—Ukh; Kajali. *Hind.*—Ganna. *Punj.*—Shakir surkh. *Bom.* & *Mah.*—Uns; Sheradi. *Tel.*—Cheruku. *Tam.*—Karumbu. *Can.*—Kabbu- *Mal.*—Karimpu.

Habitat.—Extensively cultivated throughout India in several varieties.

Parts Used.—The juice from sugarcane and a crystallized sugar obtained from the juice.

Constituents.—The juice contains saccharine matter (cane sugar), water, mucilage, resin, fat, albumen etc; guanine in small quantities is found in sugarcane; it is a white crystalline powder insoluble in water and very sparingly soluble in ammonia.

Action.—Preservative, demulcent, antiseptic, cooling, laxative and diuretic. Sugarcane increases the solubility of lime in water. It acts as food and nutrient to adipose tissue; hence sugar or sugar forming food is necessary to health; absence of it leads to rapid emaciation. Sugar is antiseptic, demulcent and pectoral. It produces heat and energy. The root of sugarcane is demulcent and diuretic. Vinegar stimulates appetite, promotes digestion and assuages thirst.

Preparations.—The preparations of the sugar-cane described by Sanskrit writers are as follow.—(1) *Ikshu-rasa* or sugar-cane juice. (2) *Phanita* or sugar-cane-juice boiled down to one-fourth; it can be drawn out in threads. (3) *Gool* or jaggery, also known as *ras*, which is prepared by boiling the juice down to a thick con-

sistence "molasses" or "treacle", the uncrystallizable portion, invert sugar, of the saccharine juice which is drained off and sold as a distinct product. When the better qualities of *gool* have been more or less completely drained of molasses they constitute the (4) coarse brown sugar known as "country" sugar which consists of a soft, moist, partly crystalline mass. From this coarser description of *gool* the crystalline forms of white sugar known as (5) *Sarkara* in Sanskrit and *Chini* or *Safed Sukkar* in Hindi are directly prepared. Double refined and crystallized sugar, called (6) *misri* or *khand*, is also prepared in several forms including *kusa misri*, sugar-candy (*Sitopala* in Sanskrit.) The other preparations of sugar-cane are (7) *Matsyandika* which is made by boiling the juice down to a solid consistence, but which still exudes a little fluid on drawing; (8) *gaudy* or formented liquor obtained from treacle; and (9) *sidhu* or fermented liquor obtained from sugar-cane juice. The properties of these preparations are mostly those of sugar. Syrup which is a B. P. preparation of sugar contains 56 parts of sugar in every 70 parts of syrup. It is prepared by adding 5 lbs. of refined sugar to 40 ounces of boiling distilled water and heating until dissolved and adding more boiling distilled water so that the product weigh 7½ lbs, and sp. gr. of 1.330.

Uses.—The thin, tender portion of the stem is largely consumed raw as sweetmeat, being simply chewed. Sugar cane juice freely drunk or *gool* with a little of dry ginger rubbed into it, and taken is said to relieve hic-cup. Sugar-candy mixed with curds is a nice drink to relieve the heaty sensation in the body. For spermatorrhoea a mixture of sugar-candy and borax (1 dr. to every tola of

the sugar candy) is taken daily for seven days. Sugar-candy dissolved in water and given for drinking is said to stop purgation, Sugar is considered useful in heat delirium and disorders of the "bile" and "wind" (*pitta* and *vata*). Sugar is used in catarrhs, as a vehicle to nauseous medicines, to preserve foods etc., it protects active ingredients from fermentation and certain iron preparations from oxidation. It is one of the most generally used articles of diet. It is taken for the purpose of maintaining animal heat; and it is the most easily digested of all the substances which maintain animal heat. Sugar is a rapid innocent stimulant useful to soldiers bicyclists etc. It is supplied as pellets to the German army. In cases of poisoning by copper, arsenic or corrosive sublimate, sugar is successfully employed as an antidote. *Externally* white sugar fully pulverised is occasionally sprinkled upon foul ulcers with unhealthy granulations. In gonorrhoea and vaginal discharges a solution of sugar (1 in 3 of water) is an excellent application; and it may be commenced with at once, and frequently injected during the day in addition to general remedies; but in vaginal discharges other remedies may be tried first. A plaster composed of equal parts of sugar and yellow soap is a nice application for boils and crude sugar is an admirable application for carbuncles. In cases of burns by fire treacle applied instantaneously on the burnt parts alleviates pain. Extreme cases of urticaria are relieved by application of a mixture of vinegar 1 part and water 2 parts; of course the bowels should be opened by salines. "Cane molasses are far richer in Vitamin B, (the absence of which in food is responsible

for wasting diseases) than either beat molasses or Sorghum;" is the opinion of three American scientists, Messrs V. F. Nelson, V. C. Heller & F. F. Fulmer, who as the result of exhaustive biological experiments have determined these Vitamin contents. Treacle as an aperient is given in drops to newly born infants; with sulphur treacle is used as a domestic laxative. Sugar or *Gool* mixed with hot milk and drunk in cases of dysuria relieves the pain considerably. A mixture of 1 tola of *gool* and ½ tola of ghee and gingelly seeds with milk and formed into a *Lep* is an application to the temple and forehead in cases of obstinate headache; diluted *Vinegar* as a lotion is also used similarly for the same complaint. *Gool* heated and melted is applied hot to the parts pricked with thorn, glass or stone ; *gool* burnt is applied to parts bitten by poisonous insects. For eyes tired with smoke fine sugar applied to the eyelids cleanses the eyes by stimulating lachrymation or a solution of sugar 1 in 3 of water is dropped into the eyes. In all forms of ophthalmia (country sore eyes, etc.) a solution of sugar (1 in 3 of water) dropped into the eye every hour or so affords relief and if applied early cuts short the disease at once. At bedtime, in these cases, it is good to apply to the eyelashes a little sweet oil or grease, and in the morning to wash the eyes carefully with hot milk and water. The solution is also useful for removing small foreign substances from the eye. Diluted vinegar (1 in 5 parts of water) is given in lead colic after a free purge. " In nervous headache, faintness, tendency to drowsiness in sore throat, and commencing cold, its fumes are snuffed into the nose. In haematuria it is very useful

when locally applied to the pubes. In local inflammatory pains as from scorpion bites, bees or gnats, in irritation produced by *Chuna*, its local application gives relief. It relieves mammary abscesses. A mixture of one part of vinegar, one part of Eau de Cologne, and two parts of water, is very often applied to the chest of consumptive patients to check profuse sweats. As a detergent or antiseptic it is sprinkled round the sick bed for disinfecting the room. Prof. Trilbert, of the Pasteur Institute of Paris, says that the burning of sugar develops formic acid, which is an excellent antiseptic. He believes it to be a very practical and effective mode of cleansing sick room. It is a good thing to burn a little sugar in a sick room, especially if the patient has been ill for a long time and the means of admitting ventilation and sunlight have been limited—(Columbus Medical Journal). Regarding the use of sugar, especially internally, Dr. M. L. Kundu, Civil Surgeon, Burma, has recently discovered from laboratory experiments as well as from long experience as a Medical Practitioner, that the use of unboiled sugar is dangerous to health. He calls attention to the fact that "from the time it is manufactured right up to the time that it reaches our cups of tea or coffee, it has been contaminated by every insect pest and specially the flies which are the most dangerous of all the insect carriers". He has made cultures from sugar obtained from grocer's shop and has been able to grow numbers of organisms of coli group from apparently harmless looking stuff. He has grown a profuse culture of a bacilli very much like Shigas though it was not identified as such. He states that all the

bacillary dysenteries of our country are not Shigas or Flexner's but are of different varieties. He has "come across cases of virulent dysentery in epidemic form in very well-appointed (ventilated?) houses lived in by educated and monied people, who are naturally very clean in their habits and food" where every article of food, receptacles, plates, water supply etc., were scrupulously examined and found quite pure and satisfactory. He therefore concludes that unboiled sugar was the sole source of mischief. He says that even putting sugar in *boiling* water is not safe, as it (boiling water) cannot kill all the germs. He advises that precaution should be taken in every household of never taking sugar unless it is boiled, in order that the chance of bowel complaints, especially in times of epidemics of diarrhoea, dysentery or cholera, may be appreciably diminished.

839. **Saccharum Procerum**.—(*Urdu.*—Sarkanda) is a species the *roots* of which are used in decoction for the suppression of urine and in urinary diseases.

840. **Saccharum Sara**. S. Arundinaceum; S. Ciliare are species belonging to Gramineae (*Sans.*—Gundra; Tilanaka. *Eng.*— Pin reed grass. *Hind.*—Kanra; Ramsar. *Punj.*—Garba ganda; Karkana; Palawar. *Ben.*—Sara. *Tel.*-Bellu.ponik) indigenous to North-West India. It is said to be refrigerant and aphrodisiac. If used daily it prolongs longevity. It is said to be beneficial in dysentery, strangury, boils, eye diseases etc. The *root* is official in the Punjab. It is burnt near women after delivery and near burns and scalds so that its smoke may come in contact with them, as it is said to have a beneficial effect on them.

841. **Saccharum Spontaneum.** (*Sans*, and *Hind.*—Kasa, *Ben.*—Chhote-kase. *Eng.*—Thatch grass) is a species found in Bengal and its *root* is used as a galactagogue and diuretic. "It is sweet in taste, refrigerant and alleviative of bile (*pitta*) burning of the skin and phthisis".—(N. N. Sen Gupta.)

842. **Sagus Laevus** (*Eng.* and *Vern*—sago) is the tree from the pith of which the starchy food is obtained. It is obtained from several other species of palms and cycads. It is an excellent food for invalids when completely softened by boiling.

843. **Salix Caprea** or S. Tetrasperma of the genus Salicineae (*Eng.*—the Sallow; Willow-bark. *Ind. Verns.*—(the flowers) Bedmushk. *Pushtu.*—Khwagawala. *Arab.*—Khilaf) are species of willow cultivated in Persia and in North-Western India. The fragrant flowers on distillation yield an essential oil or *attar* and a perfumed water (*ma-el-khilaf*) which is much used in Northern India, chiefly by Persians and in Western India by Parsis, and regarded as stimulant and aromatic. The bark contains the crystalline glucoside salicin and tannin, besides wax, fat and gum. The *leaves* of this and several other Indian willows are occasionally covered with a syrup exudation which dries up in thin, white flakes to a sugar or manna. The *bark* of S. Caprea is used as a febrifuge. *Salicin* is used as a tonic and anti-rheumatic and is used with benefit in influenza. Nocturnal emissions so often seen in young persons suffering from spermatorrhoea yield remarkably to *liquid extract* of Salix Nigra, 20 minims of the drug diluted with one ounce of water given half an hour before going to bed. All sources of sexual irritation should be removed.

844. Salvadora Oleoides is a species of Salvadoraceae (*Punj.* & *Hind.*—Jhal. *Sind.*—Kabber; Mithidiar. *Mah*—Kharkanela) met with in the Punjab and Sindh, Merwara and Trans-Indus. The seeds yield 44.6 p. c. of hard bright yellow fat. The *oil* obtained from the seeds by expression is used as a stimulating application in painful rheumatic affections and after childbirth. The *root-bark* is used as a vesicant—(Dymock). The *leaves* resemble the lanceolate senna and are purgative—(Honnigberger). They are made into a decoction and given as a purgative to horses—Watt). The *fruit* is sweet in taste and supposed to have aphrodisiac properties. The fruits eaten singly are said to cause tingling and small ulcers in the mouth.

845. Salvadora Persica; S. Indica; S. Wightiana are species of the same Genus (*Sans.* and *Mah.*—Pilu. *Eng.*—The Tooth Brush tree. *Fr.*—Salvadore de Persa. *Ger.*—Persische Salvadore. *Hind.* and *Ben.*—Chhota-pilu. *Pers.*—Darakht-i-miswak. *Bom.*—Pilva; Kakham. *Tel.*—Varagogu. *Tam.*—Ughaiputtai. *Can.*—Goni-mara) found in the arid tracts of Sind, in the Punjab and in North-Western India and Persia. The *root-bark* contains resin, coloring matter and traces of an alkaloid called "Salvadorine" trimethylamine and ash containing a large amount of chlorine. The *fruit* contains a large amount of sugar, fat, colouring matter and an alkaloid. The *seeds* contain a white fat and yellow coloring matter. The oil-cake from the seed contains nitrogen 4. 8 p. c., potash 2. 8 p. c., and phosphoric anhydride 1. 05 p. c. The pieces of the *root* are used as tooth brushes. The *bark* is also used as a tooth brush to strengthen the gums. The

fresh *root-bark*, bruised and applied to the skin acts as stimulant; in some cases it acts as vesicant and raises blisters. The *bark in decoction* is useful in low fever and as a stimulant and tonic in amenorrhoea; the dose is half a tea-cupful twice daily. The *shoots* and *leaves* are antidote to poisons of all sorts. The *juice* of the leaves is given in scurvy. *Decoction of leaves* is used in asthma, cough etc. The leaves heated and tied up in thin cotton cloth are applied in rheumatism. A *poultice* of the leaves is a useful application to painful tumours, piles etc. The *flowers* yield an *oil*, which is stimulant and laxative and "beneficial in wind, phlegm, worms, leprosy, gonorrhoea and headaches"—(N. N. Sen Gupta). It is applied to painful rheumatic affections. The *fruits* (small red berries) have a strong aromatic smell and are eaten; they are described as deobstruent, carminative, lithontriptic, alterative, purgative and diuretic; they are administered in snake bite, both in the fresh and in the dried state combined with borax. They are useful in enlarged spleen, rheumatism, tumours and lithiasis.

846. Salvia Aegyptica *Var* Pumilla of the genus. Labiatae (*Punj.*—Tukhm-malanga) is found in the Punjab plains and hills from Delhi westward and Sindh. The *seeds* are used in diarrhoea, gonorrhoea, heamorrhoids (Stewart). In Mexico and some parts of the United States a drink is made from the seeds of several of these Salvia. It seems to assuage thirst, and to improve the taste of water. It is invaluable as a demulcent in cases of gastro-intestinal disorders Like flax-seed, a grain of the seed placed in the eye forms a mucilage by means of which a foreign body may be removed from the organs. It is also of great service as

a *poultice.* Seeds of Indian species of Salvia may be put to the same uses as those of Mexico and California. The seeds are collected, roasted and ground and mixed with water and enough sugar to suit the taste. It soon develops into a copious mucilaginous mass several times the original bulk. It is used as a food. The taste is like that of linseed meal. One soon acquires fondness for it and eats it in the way of a luxury. It is besides exceedingly nutritious.

847. **Salvia Haemotodes** (*Arab.*—Behen. *Eng.*—Bloodvened sage. *Ben. Bom. & Hind.*—Lala Bahamana) is found throughout India. The *root* contains fat, tannic acid and a bitter crystalline alkaloid "Bahmanine." It is tonic, astringent and aphrodisiac; it is one of the ingredients of various compound astringent decoctions and aphrodisiac confections which are largely prescribed for seminal debility, chlorosis, anaemia, amenorrhoea etc.

848. **Salvia Plebeia;** S. Brachiata (*Chin.*—Chin-khing-kai. *Guz.*—Kammor-kasa; Bijabuda. *Punj.*—Sumandarsaka; Sathi) is found throughout India in the plains and ascending the hills to 5000 feet. The *seeds* contain albuminoids 12 p. c., oil 18.6 p. c., gum, fibre 44 p. c., and ash 15 p. c. No alkaloid. In action they are demulcent and nutritive; used in gonorrhoea and menorrhagia; also given to promote sexual powers; and useful in leucorrhoea and seminal weakness.

849. **Samadera Indica;** S. Pentapetala of the genus Simarubeae (*Eng.*—Neepa-bark. *Mal.*—Karinghola. *Tam.*—Niepa. *Cing.*—Samadara) is indigenous to Western Peninsula throughout the South Concan and Malabar, moist low country and Ceylon. Its constituents are a

fixed oil, a bitter principle "Samadarin" also called quassin. The *bark* is used as a febrifuge. An *oil* extracted from the kernels of the fruit forms a good application in rheumatism. The *bruised leaves* are externally applied in erysipelas. The *seeds* are worn round the neck as a preventive of asthma and chest affections. An *infusion of the wood* is also taken as a general tonic—(Rheede & Drury). An *infusion of leaves* is a good insecticide and destructive to white ants—(Trimen). An infusion of the wood is taken as a general tonic, as a substitute for Quassia.

850. **Sansevicria Roxburghiana** or S. Zeylanica of the genus Haemodoraceae (*Sans*—Murva. *Hind.*—Murahri. *Ben.*—Murba. *Guz.*—Murvel. *Tam.*—Marut kalang. *Tel.*—Ishaura-koda-udr. *Mal.*—Katukapel. *Can.*—Heggurutike) is found on the Coromandel coast. It is described as "purgative, heavy, sweet, pungent, tonic and cardiacal, a remedy for heat of blood, gonorrhoea, *tridosha* (a corruption of the three humours *Pitta*, *Vata* & *Kufa*) thirst, heart-disease, itch, leprosy, fever, rheumatism and glandular enlargements." This *root* is prescribed in the form of an electuary in consumptive complaints and coughs of long standing, in doses of a small teaspoonful twice a day. The *juice* of the tender shoots of the plants is administered to children to clear their throats of viscid phlegm—(Ph. Ind.).

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851. SANTALUM ALBUM.

(*N. O.*—SANTALACEAE.)

Sans.—Srigandha; Chandana. *Eng.*—White sandal-wood tree. *Fr.*—Santal blanc. *Ger.*—Weisser Santel-baum.

Hind. Duk. & *Punj.*—Safed sandal. *Ben.*—Swet-chandan; Pitchandan. *Cash. Bom.* & *Mah.*—Safed chandan. *Guz.*—Sukhada. *Tel.*—Gandapu-chekka. *Tam.*—Chandana kattai. *Can.*—Shrigandhada-mara. *Mal.*—Chandena-maram. *Malay.*—Miniak Chandana.

Habitat.—This small evergreen tree is indigenous to Mysore, grown also in Coimbatore and the Southern parts of Madras.

Parts Used.—The wood and a volatile oil.

Constituents.—The wood contains a volatile oil 3 to 6 p. c. a dark resin and tannic acid. Oleum Santali (B. P.) obtained from the wood is soluble in alcohol. The constituents of oil are.—(1) Santalol, a mixture of sesquiterpene alcohols with different boiling points; (2) an aldehyde santalol; (3) Esters, free acids etc.

Action.—The wood is bitter cooling, sedative and astringent. The oil is astringent and disinfectant to the mucous membranes of the genito-urinary and bronchial tracts; also diuretic, expectorant and stimulant.

Uses.—This fragrant wood has been used in India from a very early period and occupies an important place in Hindu ceremonials, religious and social. It is also used in carving and making elegant articles such as fancy boxes etc. It is much used by the Parsis in their fire temples. Medicinally *sandalwood* is useful in bilious fevers; applied externally in the form of a *paste* with water or rose-water to inflamed swellings, to prickly and skin eruptions; to the temples in headaches and fevers and to skin diseases to allay heat and pruritus. An *emulsion* of the wood is used as a cooling application to the skin in erysipelas, prurigo and sudamina.—(Chakradatta). In cases of morbid thirst the *powder* of the

wood is taken in cocoanut water. Two tolas of the watery emulsion of sandalwood, with the addition of sugar, honey and rice-water is given to check gastric irritability and dysentery and to relieve thirst and heat of body—(Bhavaprakash). The powder of sandalwood made into pills, or in cow's milk is administered for gonorrhoea; locally applied the powder allays prickly heat and checks copious perspiration. A powder of the following ingredients smeared in ghee and allowed to smoulder in fire and to permit the smoke to spread in all the corners of the house is said to ward off plague attacks.—Sandal white and red, Gilo, *Nim*, *Anar*, *Tagar*, Sarson white, *Khas*, Ginger *Bach*, *Dhop*, *Musakbala*, *Balchar*, *Chharilla*, Camphor, *Amothran*, *Babirang*, *Loban*, and *Narel Chhohara*. The *essential oil* in its pure state is one of the main ingredients of scented hair oils and of many floral extracts. It is widely used as an adulterant, chiefly in otto of rose. The famous German medicine "Salvarsan" is said to be a preparation of the essential principles of sandal oil. Sandal oil is a popular remedy in gonorrhoea, gleet, urethral haemorrhage and kindred affections and in pyelitis and chronic cystitis. It is given in 5-drop doses gradually (but *carefully* owing to the baneful effects of large doses on the kidneys) increased to 10 to 20 minims, commonly in capsules or in emulsion with mucilage; it is good to accompany it with a drop or two of liquor potassae. The *oil* is valuable also in bronchial catarrh. It is best given in a little omum water or infusion of ginger. A mixture of the oils of sandal, of cubebs, and copaiba is generally recommended for gonorrhoea; dose is 7

drops on sugar. In remittent fevers the oil acts as a diaphoretic. It diminishes the rapidity of the heart's action. *Externally* the oil is an excellent application in scabies in every stage and form. Sandal oil mixed with its double the quantity of mustard oil is said to be a good application for pimples on the nose. *Ilaj-ul-Gurba* recommends a *paste* made of equal parts of sandal oil and borax, with sufficient quantity of water as useful application in pityriasis, versicolor and similar affections.

Santalum Rubrum—See Pterocarpus Santalinus.

852. **Sapindas Trifoliatus**; S. Emarginatus; S. Laurifolia; S. Rubiginosus; S. Mokorossi; S. Detergens; of the genus Sapindaceae (*Sans.*—Arishta; Phenila. *Eng.*—Indian filbert; Soap-nut tree. *Hind. Mah.* & *Duk.*—Ritha. *Ben.*—Bara-Ritha. *Tel.*—Kunkudu. *Pers.*—Rathoh. *Arab.*—Finduk-i-hindi. *Tam.*—Ponan-kottai; Puvandi. *Can.*—Kookatakyi; Noorekayi. *Mal.*—Chavakayimaram. *Kon.*—Rintya rooku) are species common in Southern India and cultivated in Bengal. The *fruits* are largely used as soap-substitutes for washing. They contain about 11·5 p.c., of saponin, besides glucose and pectin. The thick cotyledans contain white fat 30 p. c. It saponifies readily. Medicinally they may be employed as emetic in doses of 1 to 2 drachms, as purgative in larger doses, nauseant and expectorant in doses of 10 to 20 grains of the pericarp or pulp and kernel of the fruit. In four-grain doses it is useful in colic, and is given with *sherbet*. The *pulp* is given in small doses as anthelmintic. The pulp is given to people bitten by venomous reptiles, also to those suffering from severe diarrhoea or cholera. It is administered as follows:—The pulp is rubbed in water until it

soaks and is then strained and given by the mouth. The *root* also has expectorant property. A thick watery solution of the drug dropped into the nostrils is said to relieve hemicrania, hysteria and epilepsy by irritating the mucous membrane and increasing its secretions. "Three or four grains may be given by the nose in all kinds of fits producing insensibility"—(Dymock). *Fumigations* with it are useful in hysteria and melancholia. Made into *paste* with vinegar it is *externally* applied to bites of reptiles and of poisonous insects as scorpions, centipedes etc., and to lessen scrofulous swellings. *Pessaries* made of the kernel of the seeds are used to stimulate the uterus to child-birth and in amenorrhoea. The *seeds* are narcotic and acrid poison. The seeds yield a thick viscous oil. Pounded up with water and introduced into the mouth they are said to cut short the paroxysm of epilepsy. The fragrant *leaves* are used in baths for painful joints and the *root* in gout, rheumatism and paralysis.

853. **Saponaria Vaccaria**; Gypsophila Vaccaria of the genus Caryophyllaceae, is a species (*Arab.*—El-sabuniyeh. *Ben.*—Sabusie. *Eng.*—Perfoliate Soap-wort. *Hind.*—Sabuni) found throughout India. The root contains 'saponin.' a white amorphous substance in crystals. In action the root is alterative, stimulant, purgative, diuretic and sternutatory. It stimulates the mucous membranes in the form of *infusion* (1 in 20) and may be used in cough, chronic bronchitis, pleurisy, asthma etc. It is also used in liver diseases, jaundice, syphilis, gout and chronic skin diseases; dose is ½ to 1 ounce.

854. **Saraca Indica** is a Leguminous tree (*Sans.*—Asoka; Vichitrah; Gandapushpa. *Eng.*—the

Asoka tree. *Hind.* & *Ben.*—Anganapriya. *Bom.* & *Mah.*—Ashoka. *Guz*:—Asupala. *Tel.*—Asok. *Tam.* & *Mal.*—Asogam. *Can.*—Asokada or Kenkali-mara *Burm.*—Thawgabo) cultivated in gardens throughout India. The bark contains tannin and catachin. The *bark* is strongly astringent and uterine sedative. It acts directly on the muscular fibres of the uterus. It has a stimulating effect on the endometrium and the ovarian tissue. It is much useful in uterine affections, especially in menorrhagia due to uterine fibroids. A *decoction of the bark* in milk is generally prescribed. It is prepared by boiling 4 ounces of the bark in 4 ounces of milk and 16 ounces of water till the latter is evaporated. This quantity is given in two or three divided doses during the course of the day in menorrhagia—(Chakradatta). It must be commenced from the 4th day of the monthly period and continued till the bleeding ceases. *Asoka ghrita* is prepared with a decoction of the bark and clarified butter with the addition of a number of aromatic substances in the form of a paste. A decoction of the bark in water with dilute sulphuric acid is also used. The bark is useful in internal bleeding haemorrhoids and also haemorrhagic dysentery. A *liquid extract* of the bark was recently tried in " cases of menorrhagia and found to do considerable good"—(Indigenous Drugs Report, Madras.) *Flowers* pounded and mixed with water are useful in haemorrhagic dysentery The dose of the fluid extract is from 15 to 60 minims.

Sarcocephalus Çadamba—See Anthocephalus Cadamba.

855. Sarcostemma Brevistigma or Asclepias

Acida is an Asclepiadean species, (*Hind. & Ben.*—Somalata. *Bom.*—Soma. *Tel.*—Jigatshumoodoo. *Sind*—Thorinjal. *Mah.*—Ransher) met with in the Deccan, common in dry rocky plains. Water passed through a bundle of *Somalata* and a bag of salt will exterpate white ants from a field watered by it. The ancient Hindus, says Birdwood, used to prepare an intoxicating liquor from the juice of the plant mixed with barley and ghee. But this does not seem to be the *Soma* plant of the Vedic period.

Sauropus Quadrangularis—See Phyllanthus Rhamnoides.

856. Saussurea Lappa; S. Auriculata; Aplotaxis Lappa or Auriculata; Aucklandia Costus are herbs of the genus Compositae (*Sans.*—Puskara; Kushta. *Eng.*—the Costus. *Fr*—Costus elegant. *Ger.*—Practige Kostwurz. *Hind.*—Kust; Pokharmul. *Ben.*—Pachak. *Bom.* & *Guz.*—Upalet. *Cash.*—Patalapadmini. *Tel.*—Kustam; *Tam.*—Gostan. *Mal.*—Seppudday. *Can.*—Koshta.) growing abundantly on the mountains around Kashmir. The roots contain odourous principle composed of two liquid resins, an alkaloid, a solid resin, salt of valeric acid, an astringent principle and ash which contains manganese. The active principles of the root are (*a*) an essential oil (*b*) a glucoside and (*c*) an alkaloid. The essential oil and the glucoside are pharmacologically active bodies. The alkaloid is less active. The *essential oil* has strong antiseptic and disinfectant properties especially against the streptococcous and staphylococcus; the alkaloid and the glucoside have little or no effect in this direction. The *glucoside* causes a small but a persistent rise of blood

pressure; the essential oil does this to a lesser degree. Both the glucoside and the essential oil have a slight but a definite bronchodilatery effect. The alkaloid is inactive in this respect. The *powdered root* and *alcoholic extract* are expectorant and are beneficial in asthma. They cut down attacks and reduce their frequency—(Ind. Med. Gaz. Nov. 1924). Ayurvedic physicians describe the drug as bitter, acrid, stimulant and alleviative of wind, phlegm, fever, phthisis, cough, and loss of the inclination for food, pains in the sides, dropsy and jaundice". The drug has been used as a tonic, alterative, antispasmodic and aphrodisiac; and as aromatic stimulant, in the form of *infusion* (1 in 10) with a little cardamoms it is used in cough, asthma, chronic rheumatism and skin diseases fever and dyspepsia. *Agnimukha Churna* a compound of Asafoetida 1 part, Acorus calamus 2 parts, long-pepper 3 parts, ginger 4 parts, Ajowan 5 parts, Chebulic myrobalan 6 parts, plumbago root 7 parts and the root of Aplotaxis auriculata 8 parts, all powdered and passed through a cloth, is recommended by Chakradatta for administration in doses of 20 to 40 grains with whey or wine in dyspepsia with loss of appetite. *Externally* the dried *powder of the root* is used as an ointment and applied to ulcers and other skin diseases, and also for resolving tumours. The *root* is used as an ingredient in stimulating mixtures for cholera. The root enters into the composition of some pastiles for fumigation. The dried powder is a useful hairwash. The powder is applied to wounds and ulcers with benefit. A *liniment* composed of the root of this plant, *kanjika* and castor oil is recommended to be applied to the forehead in cephalalgia

(Sharangadhara). The dried root mixed with mustard oil, is applied to the scalp in prurigo. Equal parts of the powdered root and of rock salt, mixed with mustard oil and fermented paddy water (*kanjika*) are rubbed on joints affected with chronic disease—(Bhavaprakash). This root was formerly extensively smoked as stimulant; it is said to be narcotic when thus used. Now it is chiefly used as a perfume and for protecting cloth from insects.

857. **Saxifraga Ligulata** a species of the genus Saxifragaceae (*Sans.* & *Bom.*—Pashanbheda. *Beas.*—Mokhan. *Hind.*—Dakachru. *Nepal.*—Sohanpe-soah. *Ravi*—Saprotri. *Pushtu.*—Kamarghvel. *Punj.*—Banpatrak ; Shaffrochi) is a native of temperate Himalaya, from Bhutan to Kashmir and the Khassia Mountains. The *rhizome* (root) contains tannic and gallic acids, starch, mineral salts, metarbin, albumen, glucose, mucilage, wax and an odourous principle and ash 12. 87 p. c., containing calcium oxalate. In action the *root* is diuretic, demulcent and astringent. It is said to dissolve gravel and stone in the bladder; it is given in doses of 5 to 20 grains in cases of diarrhoea, cough and in uric acid diathesis. It is said to act as an antidote to opium. With honey it is applied to the gums in teething of children to allay irritation. It is used as a tonic in fevers and also as antiscorbutic. It is bruised and applied to boils and also in ophthalmia—Atkinson & Dr. Stewart).

858. **Schima Wallichii** is a species of the genus Guttiferae (*Hind.*—Makriya; Chilauni) is found in Eastern Himalaya, Nepal, Assam and Burma. The Parenchyma contains starch and a red colouring matter. The *bark* is a mechanical irritant and vermicide given in tapeworms; dose is 1 to 3 grains followed by castor-oil.

Schizium Jambulanae—See Eugenia Jambolana.

859. **Schleichera Trijuga** is a large tree belonging to genus Sapindaceae. (*Punj* & *Hind*.-Kosum; Kosumba. *Mah*.—Karadayi. *Tel*.—Pusku; Roatanga. *Tam*.—Pu-maram. *Can*.—Sagdi; Chakota. *Mal*.—Puva. *Cing*.—Kong) growing in the lower Himalaya towards the North-West and also in central and Southern India, Burma and Ceylon. The bark contains tannin and ash. The pulpy arilla is subacid. The bark is astringent and mixed with oil it is applied to cure itch and other skin eruptions. The *oil* expressed from the seeds is also used for the cure of itch and acne. It is a stimulating and cleansing application to the scalp and promotes the growth of hair. A fine quality of *lac* is produced on the young branches. The *Kernel* of the seed which yields oil is composed of fat 70.5 p.c., proteids 12 p.c. fibre and ash 14 p.c.

860. **Scilla Indica** is a plant of the genus Liliaceae (*Eng*.—Indian Squill; Small wild squill. *Hind*.—*Guz*. & *Duk*.—Chhoti Jungli pyaz. *Ben*.—Suphaidikhus. *Bom*.—Pahadi kanda. *Mah*.—Bhuikanda. *Tel*.—Adavi-tella-gadda. *Tam*.—Shirunari-vengayam. *Can*.—Kadu bellulli. *Mal*.—Kantena. *Kon*.—Lahan kolkando) very common in sandy soil in Hyderabad, Bundalkand and in the Concan. The small bulb is a substitute for squills. It is much used as a stimulant, expectorant and diuretic to relieve cough, strangury, dysuria, dropsy etc.

861. **Scindapsus Officinalis** or Pothos Officinalis is a large climbing plant, (*Sans*.—Kari-pippuli; Gajapippali. *Hind*.—Badipipli. *Ben*.—Gaj-pipul. *Bom*. & *Mah*.—Thora-pimpli. *Guz*.—Moto pipar. *Tel*.—Enuga-

pippalu. *Tam.*—Attitippaili. *Mal.*—Anaitippali) growing in tropical parts of India. The fruit contains an alkaloid gum and ash. The sliced and dried fruit of this plant is used as carminative, stimulant, and as an aromatic adjunct to other medicines. It is useful in the form of decoction (1 in 10) in doses of 2 to 6 drachms, in diarrhoea, asthma and other affections supposed to be caused by *Kafa*.

862. **Scirpus Articulatus** of the genus Cyperaceae (*Sans.* & *Hind.*—Chichora. *Ben.*—Laghu kesura) is a species found in eastern India and the root of which is a mild purgative.

863. **Scirpus Grossus** (*Sans.*—Kaseruk. *Hind.* & *Ben.*—Kesur. *Punj.*—Kaserudila. *Tel.*—Gundatiga-gaddi) is very common in the Concan, principally Salsette. The *root* has astringent properties. A *conjee* made of it with milk is a suitable form of nourishment in diarrhoea and vomiting. It has bland and soothing properties also. To disguise the taste of medicines and to check sickness, the root is chewed.

864. **Scirpus Tuberosus** (*Sans.*—Raja-kaseruka. *Ben.*—Mahat-kesur) a species found in tropical India and China, bearing at the tips of its rootlets starchy edible tubers (water or ground-chestnuts), which are regarded as laxative and aperient—(Chakraverthy).

Scopolia Aculeata—See Toddalia Aculeata.

Sebefera Proper—See Litsaea Sebifera.

Semen Cydonia—See Pyrus Cydonia.

Selaginella Imbricata—See Coleus Carnosus.

865. SEMECARPUS ANACARDIUM.

(*N.O.*—ANACARDIACEAE).

Sans.—Bhallataka ; Agnimukhi ; Arushkara. *Eng.*—the Marking-nut tree. *Fr.*—Anacardier. *Ger.*—Ostindishcher Dintenbaum. *Arab.*—Beladin ; Hab-ul-kalba. *Pers.*—Bilader. *Hind, Duk,* & *Ben.*—Bhela; Bhilawa. *Bom.* & *Mah.*—Bibba. *Guz.*—Bhiamu. *Tel.*—Jeedivittulu. *Tam.*—Shenkottai. *Can.*—Ger-kayi. *Mal.*—Chermara. *Kon.*—Bibbayi.

Habitat.—This tree is found growing on the mountainous parts of tropical India.

Parts Used.—The fruit, gum and oil.

Constituents.—The kernel of the nut contains a small quantity of sweet oil; the pericarp contains a vesicating oil 32 p. c., soluble in ether and which blackens on exposure to the air. The fruit yields 2.14 p.c. of ash. The root-bark contains an acrid juice similar to that found in the pericarp. "By extracting the crushed seeds (pericarp and kernel) successively with light petroleum, alcohol and water it has been found possible to isolate the following products :—a fixed oil ; a monohydroxyl compound, to which the juice owes its corrosive properties ; catechol ; two monobasic acids, the potassium salt of an acid with strongly reducing properties"—(D. Satyanarayana Naidu, in the Proceedings of the 12th Indian Science Congress 1925.)

Action:—The juice of the pericarp and the oil are powerful escharotics. The oil is a powerful antiseptic and chologogue. The ripe fruits are regarded as stimulant, digestive nervine and escharotic. The marking nut is a gartro-in-testinal irritant when taken by the mouth. The kernel is a good nutritive food; also appetiser,

digestive and carminative. It is a good cardiac tonic, and a general respiratory stimulant.

Uses:—In Goa the nut is used internally in asthma after having been steeped in butter-milk and is also given as vermifuge. In the Concan a single nut is heated in the flame of a lamp and the oil allowed to drop into a quarter-seer or 1½ pint of milk. This draught is given daily in cough caused by the relaxation of the uvula and palate. The bruised nut is applied to the os uteri by women to procure abortion. The *juice* of the pericarp is occasionally used internally in small doses (1 to 2 minims) diluted with ten times its volume of some bland oil or ghee or honey or cream and swallowed in a mass in scrofulous affections and syphilis; also in palsy, epilepsy and other diseases of the nervous system. It is said to be most beneficial in "phlegmatic disease, any disease connected with suppressed secretions and excretions. But caution in internal administraction, should be employed; the appearance of a rash or redness of the skin or any itchy or uneasy sensation in any part of the body is a signal to stop it at once. Aromatic spirit of Ammonia with demulcent drinks and emollient applications are the remedies in such conditions. *Externally* it is sometimes used in small quantities and with a great caution as a counter-irritant in rheumatism and sprains. The vesicant *oil* is similarly employed to a small extent. Even the external application of the oil causes painful micturition with reddish-brown urine and painful and bloody stools. The oil mitigated with butter or ghee (1 in 32 of butter) is used in scaly skin eruptions such as psoriasis leucoderma etc. Mustard oil in which the fruits are

fried is used for this purpose. The *marking-nuts* enter into the composition of some caustic applications for warts and piles. A *paste* containing equal parts of the juice of marking nut, Plumbago zeylanica, Baliospermum montanum, Euphorbia nerifolia, Asclepia gigentia, Sulphate of iron and molasses, is used as an application to scrofulous glands of the neck. The *ripe fruits* for internal use are first boiled with cow dung, washed and mixed with butter before use. They are used in dyspepsia, nervous debility, skin diseases etc. They are also given to relieve asthmatic attacks. In rheumatism and for the relief of painful joints a pill containing Marking-nut, Garlic, Sesamum indicum, Apium graveolens, dry Kernel of Cocoanut, and Jaggery. Mix and make a pill mass. Dose.—grains 10 to 20. The fruit heated in a flame and the oil allowed to drop in a quarter seer of milk is a popular remedy for relaxed uvula and palate.Equal parts of marking-nuts, chebulic myrobalans and sesamum seeds are made into a *confection* with treacle and administered in doses of 40 to 60 grains. The *kernal* is not irritant. It is used in the preparation of household eatables, sweetmeats etc- It is used with advantage in simple chronic enlargement of spleen without any hepatic complication or fever. It is useful in many neurotic cardiac troubles; the rate of the heart-beat is usually increased, under its influence. It is useful in cases of pneumonia etc. A powerful restorative called *Amrita Bhallataki*, useful in haemorrhoids and other diseases of the rectum is recommended by Chakradatta, and it is made as follows.—Take of ripe marking-nuts divided into halves, 8 seers, boil them in 32 seers of water till the latter

is reduced to one-fourth and strain. Again boil the nuts in 16 seers of milk with the addition of 4 seers of clarified butter till reduced to a thick consistence. Then add sugar 2 seers and set aside for 7 days, when the preparation will be ready for use. Dose is about 20 to 90 grains twice a day with milk. This is recommendod also for leprosy, scrofula and syphilis. This was recently tested in scabies and psoriasis and found useful. An *electuary* of the marking nuts tried in cases of acute rheumatism affecting the large joints, in the General Hospital, Madras, and in cases of ulcers of the stomach and chronic gastritis, was found efficacious—(Indigenous Drugs Report, Madras). A compound pill has been recommeded for chronic glandular enlargements of syphilitic and scrofulous origin. It is made as follows :—Take of S. Anacardium and Ptychotis ajowan each 2 tolas and mercury 1 tola. Cut the fruits into pieces, using blotting to suck the oil; then rub them all into a pill mass; divide it into pills of the size of a pea. Dose is one pill twice a day taken with *Dahi*. A decoction of the bruised fruits (1 in 8) in ounce-doses has been tried and found beneficial—(Dr. H. C. Sen). Treatment with this drug continued for a month or so in the winter is said to be highly beneficial for asthmatics. It has been found to be very beneficial in all forms of neuritis, including beri-beri. The decoction with milk and ghee in gradually increasing doses has been very satisfactory in such cases, also in the peripheral neurites of chronic arsenical poisoning. In cases of sciatica and facial paralysis it is said to act like a charm; also paralysis (both the spasmodic and flaccid varieties of

the disease), spastic and simple, and many other cases of hemiplegia have been successfully treated with the decoction. It is also one of the most powerful emmenagogues and produces good effects in dysmenorrhoea and amenorrhoea. In inflammation around the uterus (Pelvic cellulitis and peritonitis) it has been used with much benefit. To remove the myotatic irritability in fevers with meningeal complications, it has been found useful. In syphilitic, rheumatic and gouty complaints it is one of the best remedies. It is believed that the drug taken in small but gradually increasing doses in the winter, makes one free from cough and colds and senile degenerations. Dr. H. C. Sen states that he has seen a man 108 years old who has been using a *confection* of the drug for many years during winter and that "the man is yet fairly strong, his hairs have not turned grey and his teeth have not fallen out, although his power of hearing is very deficient". A brownish gum exuding from the bark of S. Anacardium is regarded as valuable in scrofulous, venereal and leprous affections. The following are some very useful compound preparations containing the drug:—(1) Take equal parts of each of S. Anacardium fruit, *Gulancha*, Ginger, *Devadaru*, *Haritaki*, *Punarnava* and *Dashamul*, to make 2 tolas altogether. Boil in half a seer of water and reduce to one-fourth. Strain and administer in one dose. This and the following preparations are prescribed for paraplegia. (2) Take of long pepper, root of the long pepper and S. Anacardium fruit equal parts to make 2 tolas altogether and boil as before. (3) Take of the pulpy portion of the peduncles of ripe Anacardium fruits

and Sesamum seeds, 1 tola of each sweetened to taste with sugarcandy. This is very useful in piles. (4) A *compound confection* containing Sesamum seeds, chebulic myrabolans and Anacardium fruits, equal parts, bruised and made into a paste with treacle, is useful in piles, asthma, bronchitis, anaemia and some fevers. Some compound prescriptions for *external* application :—*e. g.*, A *Compound Oil*:—Take of mustard oil 8 ozs., Neem bark, Nux-vomica seeds, S. Anacardium fruits, each ½ oz. Fry the last three ingredients in the oil and strain off. This oil has been used for leucoderma and to stimulate indolent ulcers. Again for internal administration an *Electuary* is made up of S. Anacardium 1, Cashew nut kernel 6, and clarified honey 1 part; rub marking nut well in a stone mortar, and add gradually the cashew nut powder and honey. Dose is 1½ to 2½ drachms three or four doses daily; used in acute rheumatism.

Treatment of overmedication.—With mild toxic symptoms it is often not necessary to stop the drug altogether, only a reduction of the dose being sufficient; but if there is any great difficulty of micturition or any rash, S. Anacardium should at once be omitted. Antidöte for the treatment of the toxic symptoms produced by this drug:—These are the albumen of the cocoanut, sesamum seeds, the chebulic myrabolan, and so forth. The best results are obtained by using the first antidote. The milky juice of the albumen of cocoanut, sweetened to taste, is to be drunk in large quantities, and as soon as there is the full purgative action, the itchiness, rash etc., disappear. Any saline purgative also serves the same purpose. The itchy parts are to be covered with lint soaked in Goulard's lotion.

Restrictions to be observed when taking preparations of S. Anacardium:—Avoidance of walking in the sun, of excess in sexual intercourse, of indulgence in nitrogenous foods and salt and water. Plenty of ghee, milk, starchy and saccharine foods should be taken. Speedy marked benefit is the result of observing the restrictions.

Contra-indications against administration:—Bilious temperament, haemorrhagic diathesis, pregnancy, diarrhoea, dysentery and gastritis, also inflammatory diseases of the kidneys and chronic constipation. Toxic symptoms of over medication with S. Anacardium are: High coloured and scanty urine, sometimes tinged with blood, irritable and loose bowels with griping, erythomatous skin eruptions with itching and burning.

Season of administration:—Winter is the best season for the use of S. Anacardium. It being a very heaty remedy its dose cannot be pushed to any length in summer. Of course, in suitable cases, it may be used in every season.

Senna Alata—See Cassia Alata.

Senna Auriculata—See Cassia Auriculata.

Senna Indica—See Cassia Lanceolata.

Senna Obtusa—See Cassia Obovata.

Senna Occidentalis—See Cassia Occidentalis.

Senna Sophora—See Cassia Sophora.

Senna Tora—See Cassia Tora.

Serratula Anthelmintica—See Vernonia Anthelmintica.

866. SESAMUM INDICUM; S. Orientale; S. Trifoliatum; S. Luteum.

(*N. O.* PEDALINEAE.)

Sans.—Tila; Snehaphala. *Eng.*—Gingeli oil plant. (seed) Gingeli seed. *Fr.*—Sesame. *Ger.*—Sesom. *Hind. Cash. Punj.* & *Ben.*—Til. *Mah.* & *Kon.*—Teel. *Tel.*—Nuvvulu; Guvvulu. *Tam.*—Ellu. *Can.*—Uru-ellu. *Mal.*—Karuellu.

(Oil.) *Hind.* & *Punj.*—Til-ka-tel. *Guz.*—Mitho-tel. *Mah.*—Chokhota tela. *Tel.*—Manchi-nune. *Tam.* & *Mal.*—Nallenne. *Can.*—Ellenna. *Cing.*—Talla-til. *Burm.*—Nahusi. *Malay*—Miniak-bijan.

Habitat.—This small bush is indigenous to India and extensively cultivated, in the warmer regions. Three varieties of sesamum seeds are found: black, white and red. The black variety is the most common and yields the best quality of oil and is also the best suited for medicinal purposes.

Parts Used.—The seeds and the fixed oil expressed from the seeds.

Constituents.—The seeds contain fixed oil 50 to 60 p. c. proteids 22 p.c., carbohydrates 18 p. c., mucilage 4 p. c., woody fibre 4 p. c., and ash 4.8 p. c., The oil contains 70 p. c., of liquid fats consisting of the glyceri- des of oleic and linoleic acids and 12 to 14 p.c., of solid fats, stearin, palmitin and myristin; a crystalline substance sesamin and a phenol compound sesamol.

Action.—The seeds are laxative, emollient and demulcent; diuretic, nourishing, lactagogue and emmena- gogue. The leaves are demulcent.

Uses.—The *seeds* are specially useful in piles and constipation, taken in *decoction* or as *sweetmeats.* A

compound decoction of the seeds with linseed is used in cough and as an aphrodisiac. Ground to a paste with water, they are given with butter for bleeding piles; if taken in large quantities, they are capable of producing abortion. In amenorrhoea and dysmenorrhoea, the administration of powdered seeds in ten grain doses three or four times daily combined with a warm hip-bath containing a handful of the bruised seeds is very beneficial. *Aksir-ul-Imraz* gives the following decoction for amenorrhoea.—Take of S. Indicum, black; dry ginger, black pepper, long pepper, *bharangi* and Jaggery, of each equal parts. Make a decoction; to be used for 15 days. A poultice made of the seeds is applied to ulcers, also applied to burns and scalds. The *oil* is used largely for culinary purposes for annointing the body, for lighting, as a base for floral oils and many perfumed oils meant for the hair. The oil may be employed medicinally for all the purposes to which olive oil is applied, as for lime liniment as an oil-dressing for ulcers, suppurating wounds etc. Equal parts of the sesame oil and lime water is a popular dressing for burns and scalds. A mixture made up of a ¼ seer of sesame oil and 1 tola each of camphor, sandalwood oil, and cinnamon oil is a cure for headache. The *oil* is rubbed on the lids or dropped in the eyes for eye complaints and heaty sensation in eyes. *Internally* the oil is used in gonorrhoea; a mixture containing 20 minims each of the oil and aqua Calcis and a drachm of pure water is recommended for gonorrhoea in preference to copaiba or liquor potassae—(Dr. Morris.—Watt). The *cake* left after the extraction of oil from the seeds is

largely used as an important cattle feed and for manures. The *leaves* which abound in mucilage are useful in bowel affections such as dysentery, cholera infantum etc. An emollient *poultice* is also made from them. The *decoction* made from the *leaves* and *root* is employed as a hair-wash and is supposed to blacken the hair and promote their growth. The following *compound oil* is recommended for use in psoriasis, prurigo, leucoderma etc.:—Take of Gingeli oil 100, Aconite 8, Oil of Pongamia Glabra, Curcuma Longa, Berberis aristata, root of Calotropis gigentia, Nerium odorum, Valeriana hardwickii, Acorus calamus, Red sandal-wood, Rubia cordifolia, Vitex Negundi, and Alstonia scholaris, each 4 parts. Mix all the ingredients except Gingeli oil and make a powder. To this add cow's urine and Gingeli oil, and boil.

867. Sesbania Aegyptica; Aeschynomena Sesban; S. Aculeata, of the genus Leguminosae (*Sans.*—Jayantika. *Hind.*—Jetrasin. *Duk.*—Ravasin. *Punj.*—Jaintar. *Ben.*—Jayanti. *Bom.* & *Mah.*—Janjan; Shevari. *Tel.*—Jalugu; Somanti. *Tam.*—Champai. *Can.*—Karijeenangi-mara. *Mal.*—Kedangu) is a small tree found wild and cultivated in almost all parts of India. The seeds contain fat 4.8 p. c., albuminoids 33.7 p. c., carbohydrates 18.2 p. c., cellulose 28.3 p. c., ash 4.2 p. c., The *seeds* are described as stimulant, emmenagogue and astringent and useful in checking diarrhoea, excessive menstrual flow and to reduce enlargements of the spleen. In the form of *ointment* the drug is used for the cure of itch and various other cutaneous eruptions, for which the juice of the bark is also given internally. The *leaves* in the form of *poultices* promote

suppuration of boils and abscesses and absorption of hydrocele and inflammatory rheumatic swellings. The *juice* of the fresh leaves is given in Decca as an anthelmintic. The *root* well bruised and made into a *paste* is an excellent application for scorpion stings.

Sesbania Grandifolia—See Agati Grandifolia.

868. **Seseli Indicum** of the genus Umbelliferae (*Sans.*—Vana yamam. *Ben.*—Banjowan. *Mah.*—Kirminji-ajwan) is met with on the plains of India frequent in Central Bengal. The *seeds* act as a good anthelmintic for round worms and they are also stimulant, carminative and stomachic. Dose of simple powder is 20 to 60 grains. The seed is also used as a medicine for cattle—(Watt).

869. **Shorea Lard** (*Eng.*—Hog's lard tree) is a species found in Burma whose fruit produces an oil of the consistence of lard.

870. **Shorea Robusta** of the genus Dipterocarpeae (*Sans.*—Sala ; Asvakarna. *Eng.*—the Sal tree. *Hind.*—Sakhu. *Ben.*—Sal. (the resin) Ral ; Dhuna. *Bom.* & *Mah.*—Sal. *Tel.*—Jalari-chettu. *Tam.*—Taloora. *Can.*—Bile-bovu; Bile-bhogi-mara. *Mal.*—Karimaruthu is common in the sub-Himalayan regions and the forests of Western Bengal. The bark contains tannic principles and yields on boiling with water, an extract similar to catechu, which is an astringent. The *resin* which exudes from incisions made in the bark is a mild astringent, aphrodisiac and stimulant; it unites with fixed oil to form *plasters* and *ointments*, applied to chilblains, ulcers etc. A *paste* of it mixed with brandy and white of an egg is a very useful and soothing application for the relief of

lumbago and other rheumatic pains. A paste of it put over the top of the head is said to be a cure for elongated uvula. The following compound *ointment* is given in Chakradatta.—Take of *ral* (resin), rocksalt, treacle, wax, honey, bdellium, red ochre and clarified butter in equal parts, boil them together and prepare an ointment. *Murakibhat Ahsani* recommends an ointment for eczema; it is as follows.—Take of S. Robusta, gum-mastiche, each 1 tola, *Mom* (wax), zard 1½ tolas, and mustard oil 4 tolas. Make an ointment. With sugar it is administered in dysentery, bleeding piles etc; also used for weak digestion, gonorrhoea and as an aphrodisiac. Twenty grains of pulverised resin mixed with a pint of boiled milk taken every morning is considered a good aphrodisiac. In the dysentery of children the resin is given in doses of about 20 grains with an equal quantity of sugar treacle—(Bhavaprakash). The resin is burnt as an incense in households during the worship of gods among Hindus and in sick-rooms for its fragrant smoke. The following are some useful remedies.—(1) Take of S. Robusta 4, Mocharas 2, dried decorticated mango kernel 5, Aegle marmelos 5 and Nutmeg 5 parts. Mix and make a powder. Dose is 5 grains; used in diarrhoea. (2) Take of S. Robusta 5, Cinnabar 2, Mastiche 3, Calamus draco 3 and ghee 10 parts. Mix and make an ointment; used for foetid ulcers. (3) Take of S. Robusta, Carbonate of iron and lime, and Cardamoms, each 1 part, sugar 10, bark of Azadirachta indica, & Ophelia chirata, each 5 parts. Mix and make a powder. Dose is 15 grains; used for the removal of piles. (4) A kind of butter is prepared by frying the resin in ghee and then straining it through water. The water is

thrown away and the thick layer is kept for use as aphrodisiac.

871. Shorea Tumbuggaia (*Hind. Ben. Mah.* & *Duk.*—Kala-damar. *Tam.*—Karappu-damar; Tumbugai-pishin. *Tel.*—Nalba-damar. *Mal.*—Kara-kundurukam) is a tree of the Western Peninsula found in forests of Cudappah, Palaghat and Mysore. The *resin* is an external stimulaant, a good basis for some plasters and ointments. It is not used internally.

872. Sida Acuta; S. Carpinifolia; S. Lanceolata belonging to genus Malvaceae (*Sans.*- Bala; Pranijivika. *Mah.*- Pata. *Ben.*-Kureta. *Duk.*- Isarbedi. *Hind.*-Bariaca kareta. *Bom.* & *Guz.*—Jangli methi. *Tel.*—Visha boddi. *Tam.*—Vathathiruppi; Mallaidangi. *Mal.*—Cheruparuva. *Can.*—Visha khaddi) are found throughout the hotter parts of India and Ceylon. The *roots* of these plants are bitter tonic; also stomachic, diaphoretic and antipyretic, useful in the form of decoction or infusion in febrile affections and some forms of dyspepsia and in mild cases of debility from previous illness. *Infusion* with a little ginger added is given in intermittent fever and chronic bowel complaints, in doses of a small tea-cupful twice a day. The expressed *juice* of the root in the form of an *electuary* is employed for the removal of intestinal worms. The *root* of S. Carpinifolia is made into a smooth *paste* with sparrow's dung and water and applied for the bursting of boils and abscesses. The *leaves* warmed, moistened with a little gingelly oil and applied to abscesses hasten suppuration. The drug is used as a diuretic in rheumatic affections and as a demulcent in gonorrhoea and chronic dysentery.

873. Sida Cordifolia. (*San.*—Bala; Batyalaka; (seeds)

Beejband. *Eng.*—Country mallow. *Hind.*—Barier; Khareti. *Duk.*—Kanghi. *Ben.*—Barela. *Bom.* & *Mah.*—Chikana; Tupkaria. *Guz.*—Janglimethi. *Tel.*—Chitimutti; Tutturabenda. *Tam.*—Mayir-manikham; Paniyar tutti. *Kon.*—Kobir-sir-bhaji. *Can.*—Kisangi; Hettutigida. *Mal.*—Velluram) along with several other species are common in most places all over India. The *roots* of all these species are regarded as cooling, astringent, stomachic and tonic given in infusion in nervous and urinary diseases and bilious disorders; they are also aromatic bitter, febrifuge, demulcent and diuretic. The infusion is also useful in bleeding piles, in strangury and haematuria, in gonorrhoea, cystitis, leucorrhoea, chronic dysentery, nervous diseases as insanity, facial paralysis etc. The dose is from ½ to 2 drachms. The *root* is used as a substitute for a nonprocurable medicine—"Reddhi" in preparing *Vrihat Aswaganda Ghrita* for increasing sexual power (N. N. Sen). A *decoction of the root* with ginger is given in intermittent fever attended with cold shivering fits. The *root-juice* is used to promote the heeling of wounds. The root pounded into a *paste* with juice of palmyrah tree is applied to elephantiasis. The *powder of the root-bark* is given with milk and sugar for the relief of frequent micturition and leucorrhoea. Chakradatta recommends the following decoction and oil for use in hemiplegia, stiff-neck, facial paralysis and noise in the ears with headache—(1) *Mashabaladi Kvatha*:—Take of the root-bark of S. Cordifolia, pulse of Phaseolus Roxburghii, root of castor oil plant and of Mucune pruri-ans, Hygrophila polysperma, Vanda Roxburghii and Withania somnifera, equal parts, in all two tolas, and

prepare a decoction in the usual way. It is administered in 1 to 2-ounce doses, with the addition of asafoetida and rock salt. (2) *Balataila.*—Take of the root of S. Cordifolia 4 seers, water 32 seers, and boil down to 8 seers. To this decoction add 8 seers of milk, 4 seers of prepared sesamum oil and 1 seer of the root of S. Cordifolia in the form of paste and prepare an oil in the usual way. The oil is used for external application in nervous diseases. On the West Coast in Malabar this process of preparing the oil is repeated several times by adding fresh milk and a paste of the root-bark; this is done 14 to 101 times or more. An ounce of 101 times boiled oil is sold on the West Coast at Rs. 3 to 4. This specific oil has been used "in several cases of facial paralysis, sciatica, both internally and externally and found to be very efficacious in curing those diseases when they are due to inflammation of the nerves"—(Ind. Drug Report, Madras). Another oil called (3) *Dhanwantri Tailam* (21 and 101 times boiled) containing S. Cordifolia and 47 other substances, and prepared in milk is recommended for all disorders produced by the derangement of the wind humour (*vata*), emaciation, weakness, diseases of generative organs, paralysis and rheumatism. This was recently tried by Dr. Koman in cases of neuralgia and found useful—(Ind. Drugs Report, Madras). Dose of the oil is quarter tola taken in cummin-seed decoction. (4) A compound liniment named *Prabhanjana Vimardhana*, and made up of S. Cordifolia and the five bigger roots of *dashamula* etc., is recommended for external application in sciatica and neuritis of legs attended with pain. The *leaves* mixed with rice are given to alleviate the bloody

flux—(Lindsay). They are mucilaginous and used as a demulcent; and with other cooling leaves are applied in ophthalmia. In *infusion* they are prescribed in fevers as a cooling medicine and to check bloody fluxes. When fresh they are bruised and applied to boils to promote suppuration. The *seeds* are considered aphrodisiac, laxative and demulcent and used in piles, colic and tenesmus. Boiled milk whisked with fibrinous twigs coagulates. The fluid on decantation is given internally in piles. The *leaves* are cooked and eaten in cases of bleeding piles. The *juice of the whole plant* pounded with a little water is given in doses of $\frac{1}{4}$ seer for spermatorrhoea and gonorrhoea.—(Dymock).

Sida Indica—See Abutilon Indicum.

874. Sida Rhombifolia *var* Rhomboidea or Retusa or S. Orientalis (*Sans.*—Atibala; Mahabala. *Eng*—Yellow barleria. *Hind.* & *Ben.*—Lal-bariala; Safed or Svetbariela. *Guz.*—Kehetara-ubal-dana; Ban-methi. *Mah.*—Sadeva. *Urdu.*—Sap-devi. *Arab.*—Kulbahe-bari. *Pers.*—Shamblidebari. *Tel.*—Mayir manikkam. *Cing.*—Kotikanbevila. *Kon.*—Tupkadi) are weeds very common in India and Ceylon in the dry country. The *root* of these weeds especially of S. Retusa is held in great repute in the treatment of rheumatism. The stems abound in mucilage and are employed as demulcents and emolients both for external and internal use; useful in calculous troubles and as a febrifuge with pepper. It is used also by chemists in oxidizing mercury.

875. Sida Spinosa; S. Alba or S. Alinifolia (*Sans.*—Nagabala; Khar-yashtika. *Ben.*—Gorakchaulia. *Hind.* & *Duk.*—Gulskari. *Guz.*—Kantalo-bal. *Mah.*—

Tukati-khareti. *Mal.*—Kattu-ventiyam. *Can.*—Kadu-menthya. *Ben.*—Pilabarela. *Pers.*—Shamlethe-dashti) is another species found throughout the hotter parts of India and Ceylon. The *leaves* are demulcent and refrigerant and are useful in gonorrhoea, gleet and scalding urine. The *docoction of the root-bark* and *root* is used in mild cases of debility and fever. The leaves are bruised in water, strained through cloth and administered in the form of a draught. The root is used in decoction prepared similarly to that of S. Acuta.

876. Siegesbeckia Orientalis; S. Brachiata is a plant of the Compositae family, (*Vern:—South Ind.*—Katampam. *Chin.*—He-ki-en; Kau-kan) common throughout India. In China it is used as a remedy for ague, rheumatism, and renal colic. It contains a bitter crystalline principle named *Darutine* which is believed to be a derivative of salicylic acid. A *tincture* of the drug has been recommended in doses of 1 to 2 drachms as a remedy in scrofulous and syphilitic affections; externally a mixture of equal parts of the *tincture and glycerine* has been tried in Europe with good effect in ringworm and some other parasitic eruptions. Antiseptic properties have been ascribed to the fresh plant when applied to unhealthy or gangrenous sores. It is strongly recommended in diseases of urethra. In the form of an aqueous extract in *syrup* and sometimes combined with iodide of potassium it is prescribed in cases where a powerful alterative, sudorific and antisyphilitic is required. It is believed to be much more powerful than sarsaparilla. (Christys New Commercial Plants & Drugs").

Simaruba Excelsa—See Quassia Excelsa.

Simaruba Quassioides—See Picrasma Quassioides.

Sinapis Alba—See Brassica Alba.

877. **Sinapis Dichotoma** or S. Glauca (*Sans.*—Rakta-sarsapa. *Ben.*—Sarisa. *Hind.*—Sarsom) is a species extensively cultivated throughout tropical India for the rubefacient oil derived from the seeds. The oil is used in cooking and in skin diseases. The tender *lsaves* are eaten—(Chakraverthy).

878. **Sinapis Juncea**; S. Nigra; S. Ramosa; S. Cuneifolia; S. Rugosa of the Cruciferae order (*Sans.*—Rajika; Rajasarsapa. *Eng.*—Black mustard. *Fr.*—Moutarde noire. *Ger.*—Scwarzar senf. *Duk.*—Rayan. *Ben.*—Raisarisa. *Punj.*—Rai. *Cash.*—Asur. *Cing.*—Abbe. *Burm.*—Munniyenzi. *Malay.*—Biji Sa-sarvi) is cultivated in many parts of India. The chief constituents of the seeds are fixed oil, 25 p. c., sinigrin (a glucoside, potassium myronate), myrosin (an enzyme). In the presence of water the enzyme decomposes the glucoside, with the formation of Allyl isothiocyanate (volatile oil), and dextrose. The seeds of this are more pungent than those of white variety, and preferred for external application as a rubefacient. Mustard forms an ingredient of several emetic mixtures of which the following is an example:—Take of mustard seeds, Acorus calamus root, bark of Symplocos racemosa and rock salt, equal parts; powder and mix—(Chakradatta). As an emetic English mustard is more safe and efficient; a tea-spoonful in a tumblerful of water generally produces free vomiting in 5 or 10 minutes. It is especially indicated in drunkenness, narcotic and other poisonings and in all cases where it is desirable simply to

unload the stomach, except in cases where corrosive acids or alkalies have been swallowed. For poultices etc., Indian mustard may be snbstituted, but fresh seeds should whenever practicable, be employed. Mustard *Poultices* are usually made with *cold* water. They are spread on a piece of stout brown paper or rag and applied and kept for from 5 to 10 minutes, *i. e.*, till it produces redness of the skin; a piece of thin muslin must be placed between the poultice and the skin. In cases of fever and acute disease, the morning or early part of the day is perferable for applying the poultice. In apoplexy, convulsions, delirium, violent headaches occuring during fevers or small-pox, mustard poultices are applied to the feet and calves of the legs. In these cases, a mustard *foot-bath* (a handful of mustard added to an ordinary foot-bath) is more effectual. In some head affections, *e. g.*, the early stages of insanity and delirium tremens with determination of blood to the head, sleeplessness, restlessness and anxiety, the mustard foot-bath should be used every night before bed-time. In some cases cloths steeped in a mixture of mustard and hot water are applied as to envelop the whole of the legs and lower part of the abdomen, a cold wet towel being at the same time applied round the head. Mustard *baths* are recommended in cases of acne. They are said to have an invigorating and cleansing effect "on the skin leaving it soft and healthy and is practically useful for greasy skins and general pustular conditions"—(Dr. V. Hetherington—Practitioner.)

In cholera, colic and spasms of the bowels unattended by inflammation a mustard *poultice* is placed over the abdomen. In the vomiting of fevers and pregnancy, it is

applied to the pit of the stomach. In cholera when the patient is very low the poultice may be applied over the heart or the left side of the chest. In coughs with much difficulty of breathing, mustard poultices to the chest and on the back between the shoulder blades, afford relief. In whooping cough mustard poultices are applied along the spine. Tooth-ache, face-ache and neuralgic pains of the head and face are frequently relieved by the application of a mustard poultice over the seat of pain. In dropsy mustard is administered in the form of *whey* made by boiling half an ounce of the bruised seed in a pint of milk and straining. This quantity is given daily in divided doses. Mustard enters into the composition of several prescriptions for loss of appetite, indigestion, etc. Thus—take of mustard seeds, cumin seeds, fried asafoetida, ginger and rock salt, equal parts. Powder and mix. Dose—grains 20 with butter-milk. Mustard *oil* is largely used in India for culinary purposes. Externally it is applied as stimulant in chest affections, especially of the children; undiluted oil is vesicant and blisters at once. The *volatile oil* of mustard consists of 95 p. c. of Allyl isothiocyanate, also allyl cyanide, carbon disulphide and traces of isomeric allyl thiocyanate. *Internally* small doses are used as condiment; a teaspoonful to a tablespoonful in ten ounces of water is a useful emetic. (See also Brassica Juncea.)

879. **Sisysmbrium Irio** & S. Sophia are tall erect glabrous shrubs of Cruciferae order found in North-west India and North-west temperate Himalaya, (*Hind.*—Khub-kalan. *Punj.*—Naktrasa. *Sind.*—Jangli sarson. *Merwara.*—Parjan. *Mah.*—Rantikhi. *Pers.*—Khakshir. *Arab.*—Khub-ah). The *seed* is expectorant, stimulant and restorative;

also said to be a febrifuge. It is externally used as a stimulating *poultice*--(Dymock-Stewart.)

Sizygium Caryophyllum—See Myrtus Caryophyllum.

Sizygium Jambolanum—See Eugenia Jambolanum.

880. **Skimmia Laureola** or Limonia Laureola (*Punj.*—Ner; Barru; Shalangli. *Nepal.*—Chumloni. *Lepcha.*—Limburnyok) is a common undershrub met with throughout the temperate Himalaya from Murree to Mishmi and Khasia Mountains. It is an extremely aromatic, gregarious, ever-green shrub. Its *wood* has an aromatic scent when fresh cut. It is said that the odour of the musk-deer is popularly supposed to be derived from it. The *plant* is very similar to the Japanese Skimmia Japonica. A poisonous crystalline alkaloid *Skimmianine* has been found to be present in all parts of Skimmia Japonica, but most abundantly in the leaves. The alkaloid has been found by experiments to have a direct action on the muscles of the heart; decreasing the pulsations and causing disturbances of the diastole. The pulse is similarly affected even when atropine has been previously administered. Slight poisoning is accompanied by feeble spasms, Intravenous injection causes general symptoms of poisoning. The pressure of the blood falls even when chloral has been administered, but after a time it increases again. Skimianine has no effect on the secretion of urine. It is probable that the same alkaloid is also present in the Indian species which deserves careful examination.

Smilax Aspera—See Hemidesmus Indica.

881. **Smilax Chinensis;** S. Pseudo-China of the genus Smilaceae (*Sans.*—Chobachini. *Eng.*—China root; Bamboo Briar root. *Arab.*—Kasbussini. *Hind. Ben. Bom.* & *Mah.*—Chobchini. *Tel.*—Parangi-chekkai, *Tam.*—Parinkipatte. *Mal.*—China-paivu. *Chin.* & *Jap.*—Too-fup) is a plant indigenous to China and Japan; but the drug is common in Indian bazaars. The *root* contains fat, sugar, glucoside, coloring matter, gum and starch. *China root* is used in India to some extent like sarsaparilla, as a depurative, diaphoretic, stimulant, alterative, antisyphilitic and aphrodisiac in the form of *decoction* (1 in 10 reduced to 5); dose is 2 to 4 ounces. It is boiled in milk to which *Mastaki*, cardamoms and cinnamon are added and taken internally in rheumatism, gout, epilepsy, chronic nervous diseases, cachexia, seminal weakness and constitutional syphilis. It is used along with *anantamul* and other drugs of reputed efficacy in syphilis and rheumatism.

882. **Smilax Glabra** is a species growing in Eastern India and Southern China, where its large tuberous root is used for sores and syphilis.

883. **Smilax Lanceaefolia** is another species found in the same regions; its large tuberous *rhizome* is used in rheumatism and sores. The *juice* of the fresh root is taken inwardly for the cure of rheumatism and the refuse after extracting the juice, is applied to the affected parts.

884. **Smilax Omata** is a species cultivated in Jamaica which supplies Sarsaparilla of the British Pharmacopoea. For particulars see B. P.

885 **Smilax Ovalifolia** (*Eng.*—Wild sarsaparilla. *Ben.*—Kumarika. *Bom.* & *Mah.*—Gutvel. *Guz.* & *Hind.*—

Guti; Jangli-ushabat. *Mal.*—Kuri vilandi. *Tam.*—Malaitamara. *Tel.*—Konda tamara) is found in the Concans. It is the country sarsaparilla of the Portuguese and used as an alterative in syphilis, scrofula etc. In doses of 3 *mashas* (35 grains) it is given in Nepal for the treatment of gonorrhoea and other discharges from mucous membranes—(Watt).

886. Soja Hispida or Glycine Soja (*Eng.*—Soya bean; Soy-bean) has taken the place of meat in the diet of Chinese, Japanese and other Asiatics. Its notable characteristics are its large proportion of assimilable protein and fat, and its lack of starch and small content of sugar. Being so highly nutritious, it is not adapted for use as a side-dish, like ordinary vegetables but, like meat, supplies a chief food. Among the preparations mentioned as common in China and Japan are 'tofu' resembling cottage cheese; 'Shoyu or Soya' which has been soaked to remove the skin and then boiled and seasoned; 'Miso' or soy-bean milk, prepared by soaking pulverised beans and straining; and 'Matto' obtained by fermenting the boiled beans. The lack of starch gives the beans favour as a diabetic food, and soy-bean meal and soy-bean bread have been prepared. The beans have been also tried as a coffee substitute—(Popular Science Siftings). For more particulars see also Dolichos Soja etc.

887. Solanum Dulcamara is a shrub belonging to the genus Solanaceae (*Eng.*—Bitter-sweet. *Ind. Vern.*—Anab-es-salab (the berries). *Punj.*—Rubabarik. *Cash.*—Bhalu-mash) met with in Kashmir; but the red berries are said to be imported from Persia into Bombay. This plant is nearly allied to the potato, which it very closely

resembles in the odour of its root. Its bright scarlet *berries* are poisonous to children like an overdose of the decoction of the fresh twigs. The drug contains a peculiar glucosidal principle (hence the popular name) *Dulcamarin* or *Picroglycion* a yellowish substance, (not an alkaloid) which consists of a poisonous alkaloid "solanine' resolvable into sugar and solanidine. Dulcamara is regarded as alterative, diaphoretic, diuretic, sudorific and mildly narcotic, usually in decoction. The berries are similarly employed. It is similar, but inferior to Hemidesmus. It is used in skin diseases and catarrhal affections; also in scrofula, chronic rheumatism and syphilis: the dose is—of the *decoction*, 2 ounces; of the *powder* 20 to 60 grains; of the *extract* 5 to 10 grains; of the *syrup* ½ to 1 ounce. For making the decoction the twigs gathered should be dried ones and as thick as a goose-quill; one ounce of them chopped up should be boiled in 1½ pints of water until reduced to half the quantity.

888. **Solanum Esculentum** is a native of southern Asia, and its *fruits* are used as discutient and anodyne poultice, especially for hemorrhoids. The *leaves* are narcotic and are used internally in intoxication and externally as a soothing *poultice*—(Chakraberthy).

889. **Solanum Ferox** (*Tam.*—Ana-chundai. *Mal.*—Vellothuvazhutina. *Tel.*—Molak-kayi) is one of the ingredients of *Dasamula* and is generally prescribed for fevers in which *pitta* humour is at fault.

890. **Solanum Indicum** (*Sans.*—Brahati; Bhantaki. *Eng.*—Indian Nightshade. *Hind.*—Barhanta. *Ben.*—Byakura. *Bom.* & *Mah.*—Dolimoola; Moti ringani. *Guz.*—Ubhi ringani. *Tel.*—Tellamoolaka. *Tam.*—Kari-

mulli. *Can.*—Kiriguligida. *Mal.*—Cheruchunda. *Kon.*—Kallanta) is a plant common all over India. The fruit and root contain wax, fatty acids, and an alkaloid *Solanin*. The *plant* is a cordial, aphrodisiac, astringent and resolvent. It is useful in asthma dry cough, chronic febrile affections, colic with flatulence and worms; also recommended in dysuria. The *root* forms one of the *Laghupancha mula* of *Dasamula Kvatha* of Hindu Medicine. It is seldom used alone. It is regarded as diuretic, useful in dropsy and as expectorant, useful in cough and catarrhal affections; also diaphoretic and stimulant. The *vapour of the burning seeds* is a remedy for odontalgia. In the form of *decoction* (1 in 10) half-a-tea-cupful twice daily is given in dysuria. The *root* of S. Jacquinii is similarly employed. A *compound decoction* made up of S. Indicum, S. Jacquinii, Sida Cordifolia, Justicia adhatoda and raisins equal parts is given in bronchitis with fever—(Chakradatta).

891. Solanum Jacquinii ; S. Xanthocarpum ; S. Virginionum ; S. Diffusum (*Sans.*—Nidegdhika, Vrahali. *Eng.*—Wild Eggs plant ; Bitter-sweet woody nightshade. *Ben.* & *Can.*—Kantakari. *Arab.*—Hadaka. *Pers.*—Badinjan-i-barri. *Hind.*—Kateli. *Guz.*—Patharingani. *Bom.* & *Mah.*—Bhuiringani. *Tel.*—Nela-mulaka. *Tam.*—Kandankattari. *Mal.*—Velvottuvalutina. *Kon.*—Chincharti) is common every where, especially on the East and West Coasts of India. The *fruit* contains fatty acids, wax and an alkaloid. The *dried leaves* contain an alkaloid and an organic acid. The uses of the *root* are similar to those of the root of S. Indicum. It is used in humoral asthma, cough, catarrhal fever and pain in the chest; also dysuria,

stone in the bladder, costiveness, in dropsy, the sequela of the advanced stage of fever, leprosy, consumptive complaints, general anasarca, low vitality of the general system, enlargement of the liver and spleen. It is combined with *Kurchi* in anasarca and dysentery. The *stems*, *flowers* and *fruits* have bitter and carminative properties; fumigations with the *vapour of the burning seeds* are reputed to cure tooth-ache. The *decoction of the root* is given in combination with alcohol and mineral diuretics and during its use, milk diet should be prescribed. A decoction of the root is given with the addition of long pepper and honey in cough and catarrh and with rocksalt and asafoetida in spasmodic cough—(Chakradatta). A *compound decoction* is made up of this drug, root of Justicia Adhatoda, pulse of Dolichos uniflorus and ginger equal parts, in all two tolas; and it is administered with the addition of *pachak* root in cough with difficult breathing—(Sharangadhara.) An *electuary* made of the root together with several other substances and sugar, sesame oil, honey and clarified butter and named *Kantakaryava Leha* is recommended in Bhavaprakash for various sorts of cough.

Solanum Lycopersicum.—See Lycopersicum Esculantum.

892. Solanum Melongena (*Sans.*—Vartaku; Peetaphala. *Eng.*—Egg-plant; Brinjal. *Hind.* & *Duk.* Bhanta. *Bom.* & *Guz.*—Baigana. *Pers.*—Badangan. *Mah.*—Vayinge. *Tel.*—Vankayi. *Tam.*—Kottorikayi. *Can.*—Badanekayi. *Mal.*—Valutina; Mulukutakali. *Kon.*—Vayingana) is extensively cultivated all over India for its fruit. The *fruit* "is hypnotic, costive,

excitive of wind. The long sized fruits are phlegmatic and generative of phthisis, cough and loss of appetite. The tender fruits are antiphlegmatic and alleviative of wind and the ripe ones are carbonas and bilious. The fruits grown in all the seasons of the year are alleviative of the *three faults.* The *burnt fruits* are light in digestion, purgative, slightly bilious and beneficial in phlegm, wind and obesity"—(N. N. Sen Gupta). The fruit is generally used as a culinary vegetable. Pierced all over with a needle and fried in gingelly oil, the fruit is employed as a cure for toothache. It has also been recommended as "an excellent remedy for those suffering from liver complaints". The *green leaves* of Brinjal plant are the main source of supply of antiscorbutic Vitamin C. The *seeds* are used as a stimulant and the *leaves* as narcotic. The seeds are apt to lead to dyspepsia and constipation.

893. Solanum Nigrum; S. Rubrum; S. Incertum (*Sans. & Ben.*—Kakamachai. *Hind.*—Mako; Gurkamai. *Arab.*—Anabusa-thaliba *Bom.*—Kamuni. *Guz.*—Piludu. *Tel.*—Kamanchi-chettu. *Tam.*—Manattakkali. *Can.*—Kakmunchi. *Mal.*—Tudavalam) is common throughout India. The *berries* of this herb contain "solanin" which is a compound of sugar and solanidine—an alkaloid having the property of dilating the pupils. The *herb* is alterative, sedative, diaphoretic, diuretic, hydragogue and expectorant; locally anodyne. Solanine is a powerful protoplasmic poison acting upon amoeboid organisms and ciliated epithilial cells. The *berries* are considered tonic, diuretic and useful in anasarca and heart disease. The black berries, the leaves and young stems have all

similar properties, *viz*., alterative and diuretic. The *leaves* are employed as poultice over rheumatic and gouty joints ; also as a remedy in skin diseases. A *fluid extract* of the leaves and stems has been recommended in dropsy, in doses of ½ to 2 drachms ; also in heart disease, skin diseases, piles, gonorrhoea, inflammatory swellings and chronic enlargement of the liver and spleen, A *syrup* of it is useful as a cooling drink in fevers, and to promote perspiration. The *leaves* made hot are applied to painful and swollen testicles. A *decoction of the berries and flowers* is said to be useful in cough and consumption, in doses of 1 to 2 ounces. Cases of poisoning have occasionally occurred from eating the berries of S. Nigrum, S. Dulcamara and S. Tuberosum. Dr. Burton Brown has recorded the death of three children after eating the berries of S. Nigrum—(The Punjab Poisons). The following symptoms were observed:—"A feeling of sickness followed by vomiting, pain in the belly and intense thirst, pupils dilated with impaired vision, headache, giddiness, delirium, purging and convulsions, sleep ending in coma".

894. Solanum Tuberosum (*Eng*—Potato. *Hind. & Duk.*—Alu. *Ben.*—Golalu. Fr.—Pomme de terre. *Ger.*—Kartappe. *Bom. Mah. Kon.* & *Can.*—Batata. *Guz.*—Papeta. *Tam.*—Urla-kalange. *Tel.*—Urla-gadda.) originally a native of Chili—now it is cultivated everywhere and found all over in India. Potato is generally consumed as a nourishing food; cooked into various kinds of curries. Sprouting, growing tubers however are poisonous as well as the flowers, unripe seeds and leaves containing solanine. The full grown potato-tuber does not contain solanine. A small amount of potatoes is

utilised in the manufacture of starch. *Potato starch* forms an adulterant of fine flours and starches. A great amount of commercial glucose is made from potatoes. In many places potatoes form an important source of alcohol. Medicinally *potato* is antiscorbutic. Persons with neurotic and liver dyspepsia digest it well. It is employed as an aperient, diuretic, and galactagogue and nervous sedative and stimulant in gout. The *leaves* in the form of *extract* are employed as antispasmodic in chronic cough producing effects like those of opium. Potato ground into a *paste* is applied as plaster to burns caused by fire with much benefit. Potato contains nitrogenous substances, fat, carbo-hydrates, ash and water. The nitrogen of the potato is not all in the form of true albuminoids or proteins, but nearly half is in the form of true albuminoids and nearly half in the form of amido-compounds including principally asparagin. The non-albuminous nitrogenous products like asparagin form an important constituent of the tuber, The true albuminoids or proteins are called *tuberin*. *Tuberin* contains 16.24 p. c. of nitrogen. Some of the ingredients of the potato remain in solution in the water contained in the tuber, The *juice* of the potato is a dark colored liquid having an acid character. The acidity is due to citric, tartaric and succinic acids. The mineral matter occurs chiefly in the form of potassium salts soluble in water. The *asparagin* of the potato is also soluble in water and the tuberin more or less soluble in the solid matter. From experiments it is seen that greatest loss occurs when the potatoes are peeled and soaked in cold water before boiling. In this case "the loss of

nitrogenous matter was from 46 to 58 per cent depending upon the length of time they were soaked. Of the albuminoids 25 p. c., and of the mineral matters 38 p.c., were extracted by the water in which the potatoes were cooked". In throwing away the water the material is usually lost. When the potatoes are peeled and put into cold water and heated to boiling as soon as possible the loss is much smaller, being about 16 per cent of the total nitrogenous matter (of which albuminoids form a trifle less than half) and about 19 p. c., of the total mineral matter. The boiling water coagulates the albuminoids on the surface of the potato rendering them insoluble. They fill the outer pores of the potato, rendering the inner juices less liable to loss although not before a considerable amount of the salts or mineral matter has escaped. Potatoes are exceptionally rich in iron, but only a very slight proportion of iron exists dissolved in the cell sap and this is almost entirely precipitated by boiling. *Potato Meal* as infant food :—Mueller (L. Klin. Woch) recommends for feeding infants a potato meal prepared by washing selected, well cleaned potatoes, slicing these and drying the slices at a low temperature, not exceeding 40° C. The slices which contain the hulls are powdered and then are slightly roasted at 50 to 55° at which temperature a conversion of the starch into dextrin takes place. Such a powder contains the natural constituents, not only the mineral subs-tances and albuminoids but also the vitamines. Baked potatoes with cream are good for baby as food.

895. **Sonchus Arvensis** or S. Orixensis is a small plant of Compositae Family (*Hind.*—Sahadevi bari. *Punj.*—

Kalabhangra. *Ben.*—Ban-palang *Tel.*—Nalla-tapata. *Santal.*—Birbarang) is wild in cultivated places common in the Khassia and Himalayas. Cattle are fond of every part of the plant; on being wounded there is much *milky juice* discharged which thickens into a substance like fresh soft opium. Its medicinal properties are similar to Lactuca Scariola. Among the Santals the *root* is given in jaundice—(Rev. A. Campbell.)

896. **Sonchus Oleraceus** (*Eng.*—Sow thistle. *Punj.*—Dodak. *Patna.*—Titaliya. *Tel.*—Ratrinta. *Bom.*—Mhatara) is found throughout India in fields and cultivated places. The brownish *gum* formed by evaporation of the common sow thistle when taken internally in a dose of 2 to 4 grs., behaves as an intensely powerful hydrogogue cathartic and acts powerfully upon the liver, deodenum and colon. In its general effects it is said to most resemble elaterium producing large and watery discharges so that it has proved a valuable therapeutic agent in ascites and hydrothorax. It gripes like senna and produces tenesmus like aloes. To counteract this and to correct its fierce attacks on the mucous membranes of the intestinal tract the *gum* should be administered in combination with manna, aniseed and carbonate of magnesia or with stimulants and aromatics—(Dr. Landry—Ph. J.) The *root* and *leaves* are used in *infusion* as a tonic and febrifuge—(Irvine). In Germany the *leaves* are put into salads. The hollow thick stems are full of a milky juice; it has been used as an article of diet by men from a very early date.

897. **Sonneratia Acida** of the genus Lythraceae

(*Ben.*—Orcha; Archaka. *Uriya.*—Sundariguna. *Bom.*—Tivar) is found in the forests of Sind, Bengal, Delta of the Indus, Sunderban, Chittagong to Tenassarim, Deccan and Concan. The *fruit* is used as a poultice in sprains and swellings. The fermented juice of the fruit is said to be useful in arresting haemorrhage.

898. **Sophora Tomentosa** is a Leguminous plant met with on the shores of the Eastern and Western Peninsula and Ceylon. The *roots* and *seeds* have been considered as specifics in bilious sickness in New South Wales—(F. M. Bailey.)

899. **Soymida Febrifuga** or Swietenia Febrifuga; S. Rubra is a large tree of the Meliaceae Order (*Sans.*—Rohini; Patranga. *Mah.*—Rohuna. *Eng.*—Indian Redwood tree; Bastard Cedar. *Hind. Duk. Bom. & Ben.*—Rohun. *Guz.*—Rohina. *Tel.*—Sumi; Somidamanu. *Tam.*—Shemmaram. *Can.*—Swami-mara) is common in the hilly districts of North-West, Central and Southern India. The *bark* occurring usually in half quills of a rich red-brown colour is an astringent and antiperiodic tonic and it contains resin, starch, tannic and gallic acids and a bitter principle. It is employed in dysentery, diarrhoea; intermittent fevers and general debility; 4 to 5 drachms may be given in the 24 hours in divided doses *i. e.* about a drachm each time. In large doses it leads to vertigo and stupor. It is also used as a febrifuge and antiperiodic. The *decoction of the bark* (1 in 20) is a substitute for that of oak-bark and may be adopted for gargles, vaginal injections, enemata and also as applications for rheumatic swellings. The decoction was given in one ounce doses three times a day in cases of malarial fever and found to

be beneficial—(Ind. Drugs Report, Madras). The *powder* may be applied as *poultice*.

900. Spermacosae Hispida; S. Scabra of the genus Rubiaceae (*Sans.*—Madan ghanta. *Ben.*—Madanabanta-kadu. *Hind.*—Madanaghanti. *Eng.*—Shaggy buttonweed. *Mah.*—Ghanti-chi-bhaji; Gondi. *Tam.*—Nutti-choorie. *Tel.*—Madana-ghettu. *Mal.*—Thartuvel) is found throughout India. In action it is alterative and tonic. The *seeds* as confection are cooling, demulcent and given in diarrhoea and dysentery. The *root in decoction* (1 in 10) is alterative and used like sarsaparilla. The *seeds* have been recommended as a substitute for coffee. The dose of the *confection* of seeds is ½ to 1 drachm and of the decoction of the root is 1 to 2 ounces.

Spermacosae Stricta—See Paederia Foetida.

901. Sphaeranthus Hirtus; S. Indicus; S. Molis is a herb of the genus Compositae, (*Sans.*—Munditika; Bhikshugparivraji. *Eng.*—East Indian globe-thistle. *Hind.* & *Mah.*—Gorakmundi. *Pers.*—Zakhimi-i-hyat. *Arab.*—Kamazariyus. *Ben*—Murmuria. *Tel.*—Boedatarapu-chettu. *Tam.*—Vishnu-karandai. *Can.*—Karandagida. *Mal.*—Adakumaniyam. *Kon.*—Kalancho) found mostly in Southern India growing plentifully in the fields. The *herb* yields a deep cherry-colored essential oil. The *stems*, *leaves* and *flowers* contain a bitter alkaloid "Sphaeranthine". In action the herb is alterative, pectoral and demulcent, and externally emollient. The *distilled water* prepared like rose-water from the herb is recommended by Hakims for bilious affections and for the dispersion of various kinds of tumours. The *root* is used as a stomachic and anthelmintic in doses of about 40 grains daily

in the form of powder; also the *seeds* have the same properties. They are useful in worms and indigestion, and given with honey, in cases of cough. The *flowers* are highly esteemed as alteratives, depuratives, refrigerant and tonics, useful in skin diseases. The *root-bark* ground small and mixed with whey is said to be a valuable remedy in bleeding piles; also used as *paste* for local application. An *oil* prepared from the root by steeping it in water and then boiling it in sesamum oil until all the water is expelled, taken on empty stomach every morning for 41 days in doses of 2 *dirhems* is said to be a valuable aphrodisiac. It is used in glandular swellings in the neck with benefit and also a good remedy in jaundice—(D. Sanyal). *Leaves* dried in the shade and *powdered* are used in doses of 20 grains twice a day in chronic skin diseases as antisyphilitic and nervine tonic.

902 **Sphaeranthus Microcephalus**; S. Laevigatus (*Sans.*—Mundi. *Ben.*—Sravani. *Hind.*—Coti-mundi) is a species common in Bengal. It is used as a tonic, vermifuge and diuretic.

903. **Sphaeranthus Suaveolens** is a species found in Bengal with a strong, pleasantly aromatic odour. The *flower* is used as a tonic and alterative.

904. **Spilanthus Oleraceae**; S. Calva; S. Acmella; S. Paniculata are species of the Compositae (*Sans.*—Akalkar. *Eng.*—Para Cress. *Hind.*—Ukra; Pokarmul. *Kon.* & *Mah.*—Acharbondi; Pipulka. *Can.*—Vana Mugali. *Tel.*—Maratimogga; Maratitige) is found throughout India. The *flower-heads* are used in medicines; they contain resin similar to pyrethrin, fixed oil, yellow coloring matter,

astringent organic acid, glucose, extractive matter and mineral matter. In the form of *tincture* (1 in 10) and in doses of 10 to 30 minims it is used as a powerful stimulant and sialogogue. The whole *plant* is very acrid but the *flower-heads* are chewed to relieve toothache, which they do by producing irritation of the gums and salivation; also chewed in headache, paralysis of the tongue, cough etc. It is a popular remedy for children who stammer. It is regarded as a local specific in inflammation of the periosteum of the jaw and the application has a speedy effect in relieving pain and swelling. The tincture of these flowerheads for toothache in place of tincture of pyrethrum is recommended by Dr. W. Farquhar. A bit of lint dipped in the tincture and laid on the gums repeated 3-4 times a day, reduces pain and swelling.

905. Spinacea Glabra or S. Inermis is Chinopodiacean species (*Fr.*—Epinard iisse. *Ger.*—Glattfruchtiger Spinat. *Ben.*—Palamsaka) found in Bengal, with smooth succulent seeds, and when boiled and seasoned forms a pleasant dish.

906. Spinacea Oleracca; S. Setrandra; S. Spinosa (*Eng.*—Spinach. *Fr.*—Epinard Cornu. *Ger.*—Gemusespinat. *Hind.* & *Guz.*—Palaka. *Pers.*—Burhanpalak. *Ben.* *Bom.* & *Mah.*—Sag; Chitar; Ispank. *Tel.*—Mattur Bachhale; Dumpa bachhale. *Tam.*—Vasolekuray. *Can.*—Basale. *Kon.*—Vali) is a species cultivated as a garden vegetable throughout India. The *herb* contains a large quantity of mucilage *i. e.* nitrogenous matter and alkaline nitrates, fat, sugar, fibre and ash. Its succulent *leaves* and *stems* when boiled and seasoned

form an excellent cooling, nutritious and demulcent dish. The herbaceous parts are mildly laxative and used as an emollient, *poultice.* In the form of *infusion* and *decoction* (1 in 10) in doses of 1 to 2 ounces it is used as demulcent, diuretic and astringent in fevers, inflammations of the lungs and bowels, hurried breathing, biliary derangements and as a lithontriptic in urinary calculi. The *juice of the leaves* is used as a gargle in sorethroat. *Oleum Chinopodii* is derived from S. Oleracea (Spinach). It is a valuable drug in the treatment of affections due to ankylostoma (hook-worm). The secret of its satisfactory use lies in preventing absorption. W. Straub thinks that the fatal results were probably due to the drug being given three times a day. He states that it is important that the drug should be given in one sufficiently large dose, and that then it should be expelled from the intestines by an aperient. If a satisfactory result is not obtained by this dose, an interval should elapse before the treatment is repeated. The method used in Central America (W. W. Deeks) is quoted:—The evening before the treatment the intestines are cleared by magnesium sulphate; next morning at 7 o'clock 24 drops of Oleum Chenopodii in a gelatine capsule are given on an empty stomach. This is stated as the dose for an adult and the capsule should have been recently filled. Two hours later a similar dose of the aperient is given, and the treatment is then complete. The second aperient is given in order that the Oleum Chenopodii may not remain longer in the intestine than is absolutely necessary. Repetition of the treatment, if required should only be undertaken

after two weeks. In no case should a second treatment immediately follow the first, as otherwise toxic symptoms may be expected. Straub concludes that by taking these precautions Oleum Chenopodii may be used without risk.

Spondias Elliptica—See Buchanania Latifolia.

907. Spondias Mangifera; S Ekminut is a tree of the genus Anacardiaceae (*Sans.*—Amrataka; Pittavraksha. *Eng.*—Hog-plum or Wild Mango. *Hind. & Mah.*—Ambada. *Ben.*—Amra. *Guz.*—Ameda. *Tel*—Adavi-mamidi; Ambalamu. *Tam.*—Amputtai. *Can.*—Ambate. *Mal.*—Ambalam) met with throughout India. The *fruit* is generally eaten as a condiment, and made into chutney and pickles. The *pulp of the fruit* is acid and astringent useful in bilious dyspepsia; also a useful antiscorbutic. The *leaves* and *bark* are aromatic and astringent and administered in dysentery; the *bark* is used in bilious dyspepsia; it is sometimes used as refrigerant. The *gum* is demulcent. The *juice of the leaves* is applied locally in earache. The *decoction of its wood* is used in gonorrhoea and leucorrhoea. By some the fruit is considered to be an antidote for wounds caused by poisoned arrows, and for this purpose it is eaten either green or dry. About a tola of the tender *fruit-juice* mixed with five tolas of sugarcandy and 8 to 10 grs. of pepper-powder is a popular home-remedy for biliousness The *gum* exceeding from the bark is used in *fumigation.*

908. Staphylea Indica of the genus Vitaceae (*Ben. & Hind.*—Kurkur-jihwa. *Burm.*—Ka let. *Goa.*—Diono. *Mah.*—Karkani. *Port.*—Ratanhia. *Tel.*—Ankadoo) is found in the hotter parts of India and Burma. The *roots* and *leavee* are used medicinally in the form of *decoction*

(1 in 10) in doses of ½ to 1 ounce, as stomachic, tonic and astringent in diarrhoea, dysentery, colic etc; also used to relieve thirst during fever. *Externally* it is used for ring-worm. *Roasted leaves* are applied to the head in vertigo. The *juice of fresh leaves* is digestive and given in diarrhoea and chronic dysentery (See also Leea Styphylea or L. Sambucina).

Stephania Hernandifolia—See Cissempelos Hexandra.

909. Stercospermum Suaveolens; S. Chelonioides; Heterophragma Suaveolens; H. Chelonioides; or Bignonia Suaveolens or B. Chelonioides, of the genus Bignoniaceae (*Sans.*—Patala; Kamaduti; Madhuduti. *Tam.*—(flowers) Madan kamapu; Padri. *Hind.*—Par. *Ben.*—Parul. *Mah.* & *Tel.*—Kalgoripadri, *Guz.*—Pandan. *Can*—Hudai. *Kon.*—Kusgo) is found throughout the moist parts of India. The *flowers* contain albuminous, saccharine and mucilaginous matters and wax. *Infusion of the bark* (1 in 10) is used as refrigerant and diuretic in doses of ½ to 1 ounce in dyspepsia, fever, cough, dropsy etc. The flowers with honey stop troublesome hiccough. The *ashes* of this plant are used in the preparation of alkaline water and caustic pastes.

910. Stercospermum Xylocarpum or Bignonia xylocarpum (*Mah.* & *Kon.*—Kharsingi. *Can.*—Ghansing' is found in the Deccan Peninsula. It is stimulant, expectorant and parasiticide. The *tar* (oil from the wood is useful in the treatment of skin eruptions. Other properties are similar to those of pine tar for which it may be used as a fair substitute.

911. Sterculia Acuminata or Cola Acuminata (*Eng.*—Kola nut) is a native of the West Africa but now

cultivated in India, especially in the Botanical gardens of Calcutta The *Kola nut* is a valuable dietetic agent, sustaining the system against fatigue. They contain 2.5 p. c., of caffeine and 0.2 p. c. of theobromine and a glucoside *Kolanin*. The fresh *juice of the leaf stalks* is a remarkable styptic useful for wounds etc. Various preparations of the nut are available *viz.*, Kola wine, Kola chocolate etc.

912. **Sterculia Foetida** is a tree of the genus Sterculiaceae (*Eng.*—Poon tree; Wild almond. *Hind.* & *Bom.*—Jangli badam. *Goa.*—Kuomad. Virohi. *Tam.*—Peenathamaram. *Mah.* & *Guz.*—Narkya-uda. *Tel.*—Gurapu-badam. *Can.*—Penarimara. *Mal.*—Pottakavalam) found mostly in the Western Ghats, Southern India and Ceylon. The *Kernel* contains fixed oil 40 p. c. and starch. The *oil* is thick, bland and non-drying, depositing crystalline solid fats and fatty acids consisting of oleic and a small quantity of lauric acids. Its chief use is as a fumigatory. In itch and other skin diseases it is given internally and its *paste* applied externally. The *flowers* have most offensive odour and hence the name. The *seeds* are oily and if swallowed bring on nausea and vertigo. If roasted they are edible. The oil is extracted by boiling the seeds in water. The *bark* and *leaves* are aperient diuretic and diaphoretic. The *decoction of the capsules* is mucilaginous and astringent.

913. **Sterculia Urens** (*Sans.*—Balika. *Ben.*—Buli. *Hind.*—Gulu; Katira. *Guz.*—Karai. *Mah.*—Pandruk. *Tam.*—Velley-putali. *Tel.*—Kalvi) is found throughout India. The *gum* contains mucic acid and ash 4 p. c. The *gum* is used for making sweetmeats; the mucilage has no

adhesive power. Its uses are similar to those of tragacanth.

914. **Streblus Asper** (*Sans.*—Sakhotak. *Ben.*—Seora. *Bom.* & *Hind*—Sahora. *Mah.*—Sahor. *Ger.*—Schweilbeere. *Can.*—Akhor moranu. *Tel.*—Baranki the only species of the Moraceae genus, is a small tree, indigenous to tropical India. The *seeds* are beneficial in epistaxis, piles, diarrhoea etc. *Externally* they are applied as *paste* in leucoderma. Its *root* is used in epilepsy and inflammatory swellings and is applied to boils. The *juice* is astringent and antiseptic. The Siamese make an excellent preparation out of its *bark*.

915. **Strobilanthus Callosus** is of the Acanthaceae Order (*Bom.*—Karvi) is met with in South Deccan, common in the Ghats, and Central India. The plant has a strong aromatic odour. The *bark* with an equal proportion of that of Calophyllum Inophyllum is applied as a fomentation in tenesmus. The *juice of the bark* with an equal quantity of that of Eclipta alba, boiled down to one-half and mixed with old sesamum oil, a few pepper corns and ginger is heated and used as an external application in parotitis; equal quantities of the *juice of the flowers* and those of Randia dumetorum are smeared over bruises (Dymock). The seeds contain no strychnine; but brucine is present.

916. **Strychnos Colubrina**; S. Rheedi or Lignum Colubrinum (*Hind.* & *Ben.*—Kuchilata. *Eng.*—Snakewood. *Port.*—Pao de Cobra. *Guz.*—Gogarilakri. *Mal.*—Modira kanni. *Mah.*—Kajarwel; Devakadu. *Tel.*—Nagamusti; Tansoopaum) is a tree of the genus Loganiaceae. The *root* or *wood* contains strychnine and brucine. In

cutaneous diseases its application as *paste* alleviates pain and removes swellings. *Infusion of the bark* in doses of 2 to 3 drachms or *tincture of the root* (1 in 10) in doses of 2 to 10 minims is used as a febrifuge, in obstinate intermittent fevers, tertian and quartan; as tonic it is given in dyspepsia and malarial cachexia. As it contains strychnine in considerable quantity great caution is necessary in its use. On the whole it is a dangerous drug. This remark applies with equal force to the seeds of Strychnos Ignatii. It is largely used in bites of *Naga* snake both locally and internally.

917. **Strychnos Ignatii** is a tree of the genus Loganiaceae (*Eng.*—St. Ignatius Beans. *Arab. & Hind.*—Papita. *Tam.*—Kayappan-kottai) indigenous to the Phillipine Islands; but its seeds are occasionally met with in the drug bazaars of the large cities in India. The *seed* (St. Ignatius bean) contains strychnine 15 p. c., brucine 0·5 p. c, and proteids; glucoside loganin is believed to be present. The seeds are utilised in Europe for preparing strychnine which they yield in larger quantity than nux-vomica seeds. The seeds are therefore to be used with great caution. The seeds are said to be used in cholera in doses of 1 to 2 grains, and also in asthma, dropsy and piles. A *paste* of them is useful to reduce swellings. A *tincture* known as *Tinctura Ignatiae* is also prepared (1 in 10) and administered in doses of 3 to 20 minims as a nervine tonic.

918. **Strychnos Minor** (*Sans.*—Tinduka) is a Malabar species, the *fruit* of which is externally used in mania, the *root-bark* internally in diarrhoea and colic and externally in rheumatism—(Chakraverthy).

919. STRYCHNOS NUX-VOMICA.

(*N. O.*—LOGANIACEA.)

Sans.—Kupilu; Kulaka; Vishamusti; Vishtindu. *Eng.*—The Nux-vomica or Strychnine tree. *Fr.*—Noix Vomique *Ger.*—Gemeiner Brechnussbaum. *Hind.*—Jahar. *Arab.*—Hub-ul-jarab. *Punj.*—Kagphala. *Ben.*—Kuchila. *Bom. & Mah.*—Kajra; Kuchala. *Tel.*—Mushti-vittulu. *Tam.*—Yetti-kottai. *Can.*—Kasarkana mara. *Mal.*—Kanjiram. *Kon.*—Karya-ruku. *Burm.*—Khaboung.

Habitat.—This tree is wild and plentiful throughout tropical India, commonly in the jungles about Manbhoom in the Madras Presidency, Malabar and Coromandal Coasts.

Parts Used.—The stem bark, the dried ripe seeds called nux-vomica.

Constituents.—Seeds contain strychnine $\frac{1}{2}$ p. c. brucine $\frac{1}{4}$ to 1 p. c. Igasurine or impure brucine in combination with igasuric or strychnic acid; loganin, a glucoside (which is present also in the pulp of the fruit); proteids 11 p. c., yellow coloring matter, a concrete oil or fat, gum, starch, sugar 6 p.c., wax, earthly phosphates and ash 2 p. c. The wood, bark and leaves contain brucine, but no strychnine. The young fresh bark contains the largest percentage of brucine, *i. e.* 3·1 p. c. The leaves contain $\frac{1}{3}$ p. c.

Action.—The *seed* is nervine, stomachic tonic and aphrodisiac, a spinal stimulant; also respiratory an cardiac stimulant. In excessive doses it is a virulent poison producing tetanic convulsions. The *bark* is employed as tonic and febrifuge. Strychnine is stimulant to the respiratory and vasomotor centres. In minute

doses it has the same therapeutic action as the nux-vomica but in a more powerful degree.

Physiological action of Strychnos alkaloids.—Brucine closely resembles strychnine in physiological action, but is less poisonous. It also differs from strychnine in its more marked Curare-like action on the nerve terminations in voluntary muscle. Strychnine is highly toxic; in poisonous doses it acts principally on the spinal cord, causing excessive reflex irritability, which results in convulsions (tetanus) in which all the muscles of the body are involved. The respiratory muscles are affected in the paroxysyms and as a general rule, after two or three convulsions respiration fails to return. With very large doses death may occur almost immediately from asphyxia resulting from the paralysis of the central nervous system. The terminations of the motor-nerves are paralysed by large doses of strychnine. In small quantities strychnine slows the heart and raises the blood pressure and with poisonous doses the blood pressure is very high, due to the increased activity of the vaso-motor centre. Brucine is slower in action and more readily eliminated and not cumulative in its effects. With nitric acid it gives a red colour thus differing from strychnine which remains uncoloured.

Uses.—Nux vomica *seeds* produce a sort of intoxication for which they are habitually taken by some as an aphrodisiac. No preparation of nux-vomica seed should be used except under careful medical supervision. It is employed in doses of ½ to 3 grains in powder ¼ to 1 grain of the *extract* and 5 to 10 minims of the *tincture*. Nux vomica in powdered form is preferred for administ-

ration, especially in the treatment of dyspepsia; for, in powdered form nux vomica, as Dr. H. C. Sen says "remains in the alimentary tract for a long time, and thereby exerts its influence on the digestive tract by allowing gradual absorption of its active principles and by its prolonged mild stimulating action on the secreting cells and nervous mechanism of the alimentary tract. In very soluble form, on the other hand, the local action does not last long, and the active principles are absorbed and eliminated very soon. One of the best Indian methods of preparing nux-vomica in powdered form for medicinal purposes is to boil it in milk or a mixture of equal parts of milk and water. When the seeds become soft from prolonged heating, the cotyledons are scraped apart and the embryo is removed. These scraped cotyledons are then converted into a fine paste. As soon as the cotyledons show a tendency to become hard, they are boiled again to render them soft for easy manipulation. The process of boiling in milk is said to have a mitigating effect on the nux-vomica. It is a very important point to remember that the efficacy of nux-vomica like that of arsenic, is enhanced if the patient takes sufficient quantity of milk, ghee or butter. This preparation of nux-vomica can be used with safety for a long time. I beg to introduce this preparation of nux-vomica to medical men, so that they may utilise it for relieving the hydraheaded troubles of dyspepsia". It is used as a remedy in inter-mittents, dyspepsia, chronic dysentery, atonic diarrhoea, paralytic and neuralgic affections, worms, hysteria, mental emotion, epilepsy, chronic constipation from atony of the bowels, prolapsus of the rectum, gout,

chronic rheumatism, insomnia from over-fatigue, and hydrophobia. In neuralgia of the face and gastralgia, in sexual impotence, spasmodic diseases as vomiting of pregnancy, chorea and epilepsy, its effects are well marked. It cures diabetes if given for a long time. In functional paralysis due to anaemia of the cord, general exhaustion, spermatorrhoea, excessive venery, alcoholism, opium or lead poisoning, diphtheritic paralysis, retention or nocturnal incontinence of urine in children it acts like a charm. A pill known as *Samiragaja Kesari* is generally recommended in diseases of the nervous system. It is made up of nux-vomica, opium and black pepper, equal parts and made into two-grain pills. These are given, one twice a day, with the juice of betel leaves. Rasendrasarasangraha gives the composition of a pill called *Shulaharanayoga* prescribed in diarrhoea. It is composed of Chebulic myrobalan, long pepper, ginger, nux-vomica, asafoetida, sulphur and rock salt, equal parts and made into four-grain pills. These are given with warm water in dyspepsia with pain after meals and in diarrhoea. In tympanites nux vomica is given with antifermentives as salicylic acid. As a bitter tonic it is given with antacids and carminatives, in dyspepsia with eructations, vomiting of food and habitual constipation. In cases of hydrophobia, Pandit J. L. Duveji recommends "purified nux-vomica" to be given to the person bitten by a mad dog and the same drug mixed with water or the excretion of a cock to be applied over the bitten part. Vomiting and purging benefits the patient. The *wood* is said to be a popular remedy in the dyspepsia of vegetarians; as *paste* it is applied to the

head in headaches; a paste made of nux-vomica seeds 2 parts, black-pepper 4, dry ginger 5 and stag's horn 3 parts is useful application to swollen glands, in oedema of the hands, feet and abdomen. The *juice of the fresh bark* is given in doses of a few drops in cholera and acute dysentery. The *root bark* ground into a *paste* with lime juice and made into pills are also effectual in cholera. The *bark* is sometimes employed in *infusion* or *weak decoction*; and the *root*, which is very bitter is used to cure intermittent fevers and the bites of venomous reptiles. A *paste* of nux-vomica seeds is used in rat bites. The paste mixed with dry ginger and the horn of the antelope rubbed on a stone is used with benefit in muscular and chronic rheumatism. *Ilaj-ul-Gurba* prescribes a paste made of the equal parts of nuxvomica seed, seed of Momordica charanta, red ochre, *siah jeera* and root of *Bismari ki-Jhad*, for application in tympanitis (inflammation of the tympanic membrane). The *oil* obtained by heating the fresh seeds is also a useful external application in chronic rheumatism, also in palsy and relaxation of the muscles and tendons. Nux.vomica is useful in the treatment of tobacco-amaurosis and paralysis following on exhausting diseases such as diphtheria, gastric catarrh etc; and in debilitated conditions of the alimentary canal. As a respiratory stimulant it is used in bronchitis, emphysema and phthisis. The *leaves* of the nux-vomica tree are applied as *poultice* to sloughing wounds or ulcers when maggots have formed.

Strychnine is obtained from the dried ripe seeds of nux-vomica. It is chiefly used as a tonic for the sake of

its local action on the digestive system; also employed in various forms of paralysis owing to its stimulant action on the central nervous system. It is generally used as a vermin killer. It is prescribed in doses of 1/32 to 1/8 grain in solution or in *pill*. It is also used in almost all the cases in which nux-vomica is used. Various spasmodic diseases as chorea, asthma and epilepsy are said to be cured by strychnine. It is antagonistic to chloral and calabar bean. It is also employed hypodermically as a remedy in narcotic poisoning and against the effects of chronic alcoholism, also as an antidote to snake-bite administered hypodermically (1/16 to 1/10th grain) close to the bitten part. Brucine has been used in epilepsy in doses of $\frac{1}{8}$ to $\frac{1}{2}$ grain in solution.

Contra-indications against the use of strychnine are:—recent cases of paralysis, acute paralysis of the lower extremities with structural alterations of the cord and that form of paralysis due to softening of tumours.

Incompatibles are:—alkalies and alkaline carbonates iodides, bromides, mercuric chloride, and tannic acid.

Antidotes for poisoning are:—Stomach tube; emetics; tannic acid in solution; large doses of charcoal in water; a draught containing potassium bromide (1 drachm) and chloral (half drachm) if not by mouth, give per rectum. Chloroform inhalation between spasms or Amyl nitrate inhalation between spasms or even subcutaneously.

920. **Strychnos Potatorum** is a tree of the same genus (*Sans.*—Kataka; Ambu-prasad; Jalada. *Eng.*—Clearing-nut tree. *Hind. Ben. Bom.* & *Mah.*—Nirmali, *Tel.*—Chilla Chettu. *Can.*—Chali-mara. *Mal.* & *Tam.*—Tetta-maram. *Kon.*—Chel beey) belonging to Bengal.

Central and Southern India and Burma. The seeds contain no strychnine; but brucine is present. In action they are alterative, tonic, stomachic and demulcent. They are non-poisonous. The *seeds* are used to clarify foul and muddy water. They are sliced and rubbed round the sides of the unglazed earthen vessels in which drinking water is stored, which acts as a machanical precipitant of suspended matter present in the water. The action is clearly due to albumen, present in the seed. Medicinally half to one full *seed* rubbed up into a fine *paste* with some butter-milk and given internally for one week is useful in long-standing and chronic diarrhoea. The *powder of the seed* is given internally with milk in irritation of the urinary organs and in gonorrhoea. It is also used as a remedy in diabetes. The seeds rubbed up with honey and a little camphor, into a *paste* are applied to the eyes in lachrymation or copious watery discharge from them. Rubbed with water and rock salt they are applied to chemosis in the conjunctiva. *Powdered seed* mixed with honey is applied to boils to hasten suppuration. The *fruit* is regarded as an emetic and antidysenteric; it is given as a powder in doses of half a teaspoonful. The pulp is a good substitute for ipecacuanha in the treatment of dysentery and bronchitis. It is also regarded as a remedy for diabetes.

921. **Styrax Benzoin** of the genus Styraceae (*Eng.*—Benzoin tree; (the resin) Gum Benzoin. *Vern.*—(the resin) Lubban. *Mah.*—Oodh) is a native of the Malay Peninsula (Lower Siam) and Sumatra. The gum Benzoin flowing from the incised stem bark of the tree and which is largely imported into India from Penang,

contains three resins, benzoic acids cinnamic acid, vanillin and volatile oil. *Benzoin* is, in action, antiseptic, disinfectant, stimulant and expectorant. It is used throughout India as an incense. It is the source of benzoic acid which is largely used in medicine as aromatic stimulant, expectorant, antiseptic and styptic. When burnt its *vapour* is used as deodorant and antiseptic, in sick rooms and hospitals. As diuretic it is useful in calculous disorders from phosphatic deposits in the urine. Its combinations with alkalies, *viz.*, Ammonia, Potash and Soda, called *benzoates*, are more decidedly diuretic and useful in dropsy and gouty concretions. It is useful in jaundice and in incontinence of urine in childern. Mixed with ointments it prevents rancidity ; its vapour as inhalation is useful in cough and hoarseness and in whooping cough, in laryngitis, tracheites, bronchitis, asthma and phthisis. Its compound tincture, popularly known as *Friar's Balsam* or traumatic balsam has been employed as a styptic and healing application; a piece of lint or soft rag dipped into it and wrapped over cut surfaces will usually stay the haemorrhage and effect a cure. It is also a useful application to foul and indolent ulcers. A teaspoonful of the *tincture* added to a quart of water forms a milk—Lait Virginal—largely employed in the toilet and for bathing irritable skin eruptions. Internally it is employed in cases of alkaline urine and in distressing coughs, the dose being 30 drops to a drachm on lump sugar or in mucilage; the dose of benzoin is from 3 to 10 grains. In the form of *suppository* it is used in uterine discharges.

922 **Suaeda Fruticosa** belonging to Chenopodi-

aceae (*Punj.*—Leonuk; Chotee lanu. *Mah.*—Morasa. *Sind:*-Ushaklan. *Pustu:*—Zimeh) is found in the Northwest India and throughout the Punjab, Westward to the Indus, and common in the plains. This is one of the plants from which *Sajjikhar* is prepared. The *woolly excrescenses* on the tips of its branches, mixed with an empyreumatic oil, are used as an *application* to sores on the backs of camels. The *leaves* are applied as a *poultice* to ophthalmia and used in infusion as an emetic.

923. **Swertia Chirata**; S. Affinis; S Paniculata; S. Purpurascens; S. Angustifolia are plants of the genus Gentianaceae (*Sans.*—Kirata-tikta; Bhunimb. *Eng.*—Chiretta. *Hind. Guz. Mah.* & *Duk.*—Charayatah, *Ben.*—Chiretta) some of which are indigenous to temperate Himalaya at altitudes above 4000 feet from Simla to Nepal and Bhutan, and others are found in various other parts of India. The constituents of the plant generally are.—ophelic acid, an amorphous bitter principle; *chiratin* a yellow bitter glucoside; resins, gum, carbonates and phosphates of potash, lime and magnesia; ash 4 to 6 p. c.; no tannin. For action and uses see Gentiana Kurroa.

924. **Swertia Decussata** (*Duk:*—Salaras or Silajit. *Tel:*—Shilajatu. *Hind.*—Kadu) is a native of N. Circars, Deccan, and Mahableshwar. In action it is like chiretta, a bitter stomachic tonic, febrifuge, laxative antiperiodic. It is used as antiperiodic with neem-bark and black pepper and given in fevers in the forms of *infusion*; dose is ½ to 2 ounces.

Symplocos Beddomei or Hopea Racemosa—See Styrax Benzoin.

925. Symplocos Racemosa; S. Theofolia belonging to Styraceae (*Sans.*--Lodhra; Tillaka; Srinata; Savura. *Eng.*--The Lodh tree; (*barh*) Lotur-bark. *Hind. Ben. Mah.* & *Guz.*—Lodhra. *Tel.*—Ludduga-chettu. *Can.*—Balalodduginamara. *Arab.*—Moogama) is a small tree of the lower hills of Bengal, Assam and Burma. The bark is found to contain the following alkaloids.—Loturine (present in large quantity—.24 p.c.). Colloturine, Loturidine and Quinovin or kinovin; and ash which contains carbonate of soda; but no tannin. The *bark* is considered cooling and mild astringent, useful in bowel complaints such as diarrhoea, dysentery etc., in dropsy, eye diseases, liver complaints, fevers, ulcers etc; it forms an ingredient of many prescriptions for bowel complaints, along with bela and nux vomica or *kurchi* bark. In fevers, dysentery and liver complaints it is used in the form of *compound decoction* and *infusions*. In dysentery a *compound powder* containing liquorice root, Myrica sapida bark and pomegranate rind in equal preparations to *Lodhra* bark is used. It is recommended in doses of 20 grains in powder mixed with sugar, in cases of menorrhagia due to relaxation of the uterine tissue, given two or three times a day for three or four days. A *fluid extract* in half-drachm doses would be a more suitable form in such cases. This has been well tested recently and found to be very efficacious in various diseases. It was tried in cases of acute dysentery in which the Ipecac treatment had failed) and also in diarrhoea and found beneficial--(Drs. Murray & Chakraverthy). It has been highly extolled also in the treatment of chyluria (filarial) by Liet. Col. Russel and Dr. K. L.

Dey. A *decoction* of the wood of the Lodh tree is used as a gargle for giving firmness to spongy and bleeding gums and in relaxed uvula. In bleeding from the gums a *paste* composed of Lodhra bark, *rasot*, tubers of Cyperus rotundus, and honey is applied to the gums—(Chakradatta). It is one of the constituents of a *plaster* or *lep* used to promote maturation of boils and other malignant growths. The *Amritasagara* recommends the following application for ophthalmia;—Take of Lodhra bark, liquorice root, burnt alum and *rasot* equal parts and rub into a *paste* with water. This is applied round the eyes.

926. Synantherias Sylvatica (*Sans.*—Vajrakanda. *Eng.*—Wild Suran. *Mah.*—Vajra mula. *Goa.*—Uzomut) is of the Araceae, found in several parts of India. Its *crushed seeds* are used to cure toothaches; a small quantity is placed in the hollow tooth covered with cotton. It acts by rapidly benumbing the nerves. It is also applied externally to bruises on account of its benumbing effects. The *paste* of seeds is locally applied to reduce glandular swellings. The taste of the *fruit* is intensely acrid. In a few seconds it causes burning of the tongue and lips which lasts long causing salivation and numbness.

Syzygium Caryophyllata.—See Myrtus Caryophyllata.

Syzygium Jambulanum.—See Eugenia Jambolana.

927. Tabernaemontana Coronaria; T. Heyneana belonging to Apocynaceae (*Sans*—Nandivraksha; Tagara. *Hind.*—Chandni. *Ben.*—Siulicop. *Eng.*—East Indian rose-bay; Wax-flower plant; Ceylon Jasmine.

Tel.—Nandivardhanamu. *Tam.* & *Mal.*—Nandiyavertam; Gandhitagarappu. *Can.*—Maddarasagida. *Kon.*—Vadli namdit) is met with in Bengal and South India. The root contains resin, extractive matter and a bitter alkaloid. The milky juice contains caoutchouc and resin. The *root* is a local anodyne. The *root* or the *root-bark* is chewed for the relief of toothache. The root bark is anthelmintic. The root rubbed with water into a thin *paste* and administered, acts as vermicide; the same mixed with lime-juice is applied "to remove opacities of the cornea"—(Rheede); also to other eye-diseases. The *milky juice of the leaves* is dropped into the eye to cure ophthalmia; also a cooling application to irritable surfaces, to wounds to prevent inflammation. The *juice of its flowers* mixed with oil is used to relieve the burning sensation of sore eyes; also used in skin diseases.

928. Tabernamontana Crispa (*Sans.*—Pinda tagara) is a species found in Madras coast; the acrid *juice of its root-bark* is used in diarrhoea and as an application to abscesses.

929. Tabernamontana Dichotoma is a tree found in Ceylon; its fruit is poisonous.

930. Tacca Aspera; T. Lavis; T. Pinnatifida of the genus Araceae (*Sans*—Surana. *Ben.* & *Hind.*—Varahikand. *Mah.*—Dukar-kand; Sakara-kand. *Tam*—Kara. *Tel.*—Kunda gadda. *Can.*—Handi-gedde. *Duk.*—Bara-kanda. *Kon.*—Devakando) is of tropical India; the Concans & Central India. The *tubers* are alterative, nutrient and tonic, given as *confection* in doses of 1 to 2 drs., in cachexia, leprosy, scrofula etc. The *root-stalk* is intensely bitter when raw. It is full of starch, which,

when prepared is of excellent culinary properties, and is far preferable to that of any other arrowroot for dysentery.

931. **Tagetes Erecta** is a plant of Compositae order (*Eng.*—the French Marigold. *Hind.* & *Ben.*—Genda. *Bom.*—Makhmal; Gul-jafari. *Mah.*—Rojia-chaphul) commonly cultivated in Indian gardens for their bright-yellow flowers. The *flowers* made into garlands are used to decorate the neck of idols. The flowers yield a yellow dye. Medicinally the *juice of the flowers* is occasionally used as a purifier of the blood and as a remedy in piles.

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932. TAMARINDUS INDICA.

(*N. O.*—LEGUMINOSAE)

Sans.—Tintrani; Amlavraksha. *Eng.*—the Tamarind tree. *Fr.*—Tamarinier. *Ger.*—Tamarindi. *Pers.*—Ambala. *Ben.*—Tentul. *Guz.* & *Duk.*—Amli. *Hind.* & *Punj.*—Imli. *Cash.* & *Arab.*—Tamar-i-hind. *Mah.*—Chinch. *Tel.*—Chinta-pandu. *Tam.*—Puliyam-palam. *Can.*—Hunasehannu. *Mal.*—Puli. *Cing.*—Siyambula. *Burm.*—Magi. *Malay.*—Assam java. (*seeds*) *Eng.*—Tamarind stone. *Mah.*—Chinchoka. *Guz.*—Amlina chichora.

Habitat.—This evergreen tree which is indigenous to South India is cultivated throughout India and Burma.

Parts Used.—The pulp of the fruit, seeds, leaves, flowers and the bark.

Constituents.—The pulp contains tartaric acid 5 p.c., citric acid 4 p. c., malic and acetic acids, tartaric of potassium 8 p. c., invert sugar 25 to 40 p. c., gum and pectin. The seeds testa contain tannin, a fixed oil and

insoluble matter. The seeds contain albuminoids, fat, carbo-hydrates 63.22 p. c., fibre and ash containing phosphorus and nitrogen.

Action.—The unripe fruit is highly acid. The pulp of the ripe fruit is cooling, carminative, digestive and laxative; a valuable antiscorbutic and antibilious. The seeds are astringent. The tender leaves and flowers are cooling and antibilious. The red outer covering of seeds is a mild astringent. The bark is astringent and tonic.

Uses.—The pulp of the fruit is used as an adjunct to other laxatives as in the confection of senna or to increase the action of sweet purgatives such as Cassia and Manna. Tamarind, ripe fruit of a year or two old is good in atony of liver, stomach and intestines. The *first ripe fruit* is useful in constipation. It is also useful in intoxication from Datura and from spirituous liquors, for which Chakradatta recommends the following:—Take of tamarind pulp, dates, raisins, pomegranate seeds, fruits of Grewia Asiatica and ripe emblic myrobalans, each one tola, pound them together and make an emulsion with 32 tolas of water. Dose:—2 ounces. Tamarinds are used largely in Indian dietary, in curries & chutnies; & boiled in water and sweetened with sugar or as a cooling sherbet with milk (1 in 20) it is useful as a laxative for children suffering from fevers; or a syrup of tamarinds, figs and prunes is similarly useful in 1 to 2 drachm doses. One ounce of tamarind fruit with one ounce of dates boiled in a quart of milk and strained and a little of cloves and cardamoms and a few grains of camphor added forms an excellent laxative drink useful in fevers, sun-stroke, and in inflammatory affections. In loss of appetite and disinclination for food

an agreeable cooling drink known as *Amlica pana* is prescribed:—Macerate some tamarind pulp in water, strain, and add black-pepper, sugar, cloves, camphor and cardamoms to taste. Tamarind is useful in preventing or curing scurvy. The *pulp of the ripe fruit* as well as a *poultice of the leaves* are recommended as applications to inflammatory swellings to relieve pain. Hakims consider the pulp useful for checking bilious vomiting and for purging the system of bile and to adjust humours. A *gargle* of tamarind water is useful in healing aphthous sores and sorethroats. The *ashes of the burnt shells* of the ripe fruit are used as an alkaline substance along with other alkaline ashes in preparing medicines such as *Abhayalavana* which is used in enlarged spleen of long standing. The *powdered seeds* are given in dysentery, and used as a *poultice* to boils after being boiled. The *leaves* crushed with water and expressed yield an acid fluid useful in bilious fever and in the scalding of the urine. *Leaves* crushed with water and made into a *poultice* are applied in inflammations of ankles, joints etc. to reduce swellings and to relieve pain. A thick *syrup of pulp* and leaves boiled will heal up swellings with great heat and burnings. A *poultice of the flowers* is said to be useful in inflammatory affections of the conjunctiva. The *juice* expressed from them is given internally for bleeding piles. A *decoction of the leaves* used as a wash for indolent ulcers promotes healthy action. The *juice* of the leaves warmed by dipping a red-hot iron is given in dysentery. The red covering of the seeds is useful in chronic dysentery, in powder in half-drachm doses in the form of a bolus mixed with three times

the quantity of cumin seeds in powder and a sufficient quantity of palmyra sugar-candy to taste. The *ash of the bark* is given internally as a digestive. The *bark* fried together with common-salt in an earthen pot to white ash and powdered is a remedy for colic and indigestion in one to two grain doses. A gargle of the ash and water is used in sorethroat and to heal aphthous sores. The acid exhalation from the foliage of the tamarind tree is said to be injurious to health; on this account peasants rarely sleep under it.

933. **Tamarix Articulata;** T. Orientalis is a small tree of the genus Tamariscineae, (*Punj.*—Faras; Farwa; Marlei. *Sind.*—Asrelei. (the galls) *Hind.*—Chotimain. *Bom.*—Magiya-main. *Ben.* & *Hind.*—Lal-Jhau) is found in Sind and the Punjab. The galls are astringent. The bark is bitter, astringent and probably tonic. The *bark* powdered and combined with oil and *Kamala* is used as an aphrodisiac. It is also employed as an application in eczema capitis and other diseases—(Watt).

934. **Tamarix Gallica;** T. Indica; T. Dioica (*Sans.*—Jhavuka. *Eng.*—Manna. *Hind.* & *Ben.*—Jhau) (the galls)—Badimayi. *Pers.*—Gazmazaj; Gazangabin. *Guz.*—Jhav-nu-jhad. *Punj.*—Pilchi. *Tel.*—Erusarumanu) common in Persia and Afghanistan and found throughout India, near rivers and along the seacoast. These galls are smaller than the true galls. The galls yield tannic acid. Manna contains cane-sugar, invert sugar (Levulose and glucose), dextrin and water. The *galls* are used in *powder* or *decoction* on account of their bitter tonic and astringent effect in chronic discharges and watery fluxes. They are also used in the form of *pessaries*. A strong

infusion of them is a local application to foul sloughing ulcers and phagedenic buboes. It is used internally in dysentery and diarrhoea also. The *tamarisk manna* is a mild aperient, expectorant and detergent. It forms an ingredient of aperient and cough mixtures. It is found as a more or less solid mass liquifying on keeping to a honey-like consistence. As a mild laxative it causes soft motions without irritation of bowels; it is very suitable for children as it has a sweet taste; it may be given with milk.

935. **Taraktogenos Kurzii** of the genus Bixineae (*Burm.*—Kalanzo; Kalawaso) is found in the Eastern and Southern slopes of the Pegu, Yoma, very frequent in Martaban; forests of Sylhet, Chittagong, Minbu district and Upper Burma. This is the tree which yields the Chaulmoogra seeds and oils of commerce. The seeds yield the oil.

936. **Taraxacum Officinale**; T. Densleonis is a plant belonging to genus Compositae, (*Eng.*—the Dandelion. *Hind.*—Dudal; Baran; Kanphul. *Duk.*—Pathree. *Punj.*—Dudli. *Sind.*—Buthur. *Kon.*—Undrachekan) found on the temperate Himalaya, common in Tibet and on the Nilgiris. The milky juice contains a bitter amorphous principle—taraxacin, a crystalline principle—taraxacerin; also potassium and calcium salts, resinoid and glutinous bodies. The root contains inulin 25 p. c., pectin, sugar, levulin, ash 5 to 7 p. c. The *root* is a valuable hepatic stimulant and very beneficial in obstructions of the liver and visceral diseases. It is also a mild tonic, diaphoretic, cholagogue and diuretic. A popular combination is that of the *fluid extract* with podophyllin,

which may be reckoned as a good remedy in chronic liver congestion and torpor. The root is also given in dyspepsia, jaundice, dropsy, chronic skin diseases and cachectic disorders generally. A *decoction* of the sliced fresh root (1 in 20 reduced to 10) with the addition of cream of tartar (4 drachms to the pint) is taken in 2 ounce doses twice or thrice a day. The dried root powdered is frequently used mixed with coffee.

937. Tavernierea Nummularia is of Leguminous Order. (*Bom.* & *Sind*—Jeti mad) met with in Sind, Punjab and Deccan. The *leaves* ground into *paste* are applied as poultice to sloughing ulcers to keep them clean.

938. Taxus Baccatta of Coniferae order (*Sans.*—Manduparni; Talispatra; Barahmi. *Eng.*—Himalayan Yew. *Hind*—Thuneer. *Ben.*—Sugandh.) is a native of temperate Himalaya, Afghanistan to Bhutan and Kassia Hills. In the form of tincture (1 in 8) dose ½ to 1 drachm, or Infusion (1 in 20) dose—½ to 1 ounce it is used as antispasmodic and given in asthma, haemoptysis, epilepsy and other spasmodic affections. The leaves contain a volatile oil, tannic and gallic acids and resinous substance called toxin. Yew *leaves* and *fruits* are given for their emmenagogue, sedative and antispasmodic effects. They act as antilithic in calculus complaints. The dried leaves and twigs of this plant constitute *talispatra* of Indian bazaars. It is remarkable that in Bengal bazaars the *talispatra* should be an Abies—See Abies Webbiana.

939. Tectona Grandis is a tree of Verbenaceae order (*Sans.*—Saka. *Eng.*—Teak tree. *Ben.*—Segan. *Hind.* *Guz.* *Mah.* & *Duk.*—Sagwan. *Tam.*—Teku. *Tel.*—Tekkoo. *Mal.*—Tekka; Jati. *Pers.*—Sal. *Arab.*—Saj.

Burm.—Ky-won. *Can.*—Jaddi; Tegu. *Cing.*—Tekka) is a native of Concans, W. Deccan peninsula, Central India and Burma. The wood contains in its cavities white crystalline deposits of calcium phosphate, silica and ammonium and magnesium phosphate, also a resin; the seed contains a bland fatty oil. A *paste* is made from the wood. In action it is a local refrigerant and sedative. The wood brayed in water is used as a local application for the relief of headache, toothache, and to subdue the inflammation and irritation of the skin set up by the use of marking nuts and cashewnuts. It is also used for dispersing inflammatory swellings. The oil of the nuts is used to promote the growth of hair and also to cure itchiness of the skin. The bruised seeds with *palasa papada* are used as varalians over the pubes in partial suppression or retention of urine.

Tephrosia Purpurea—See Galaga Purpurea.

Teramnus Labialis—See Glycine Labialis.

940. Terminalia Arjuna; Pentaptera Glabra; P. Angustifolia of the genus Combretaceae (*Sans.*—Arjuna; (red) Raktarjuna. *Eng.*—The Arjuna Myrobalan. *Hind.*—Arjuna, *Ben.*—Kahu; Arjun, *Bom.*—Arjuna-sadra. *Tel.*—Yermaddi; Macchettu. *Tam.*—Vella-marda. *Mah.*—Shardul; Sanmadat. *Guz.*—Sajadan; Sadado. *Can.*—Billimatti; tormatti; holematti) is found in Lower Himalaya, Bengal, Burma, Central and Southern India and Ceylon. The bark contains tannin including gluco-tannic acid 15 p.c., a coloring matter, a glucosidal body and ash 30 p.c., containing sodium, calcium carbonates and traces of alkaline chlorides. In action the *bark* is astringent, cardiac stimulant, tonic and lithontriptic. It

is used in *decoction* (1 in 10) in doses of half to one ounce in haemorrhages and other fluxes; also in diarrhoea, dysentery and sprue. It is also useful in bilious affections and as an antidote to poisons—(Baden Powell). As tonic *pulverised bark* is given with milk or with ghee and sugar in heart diseases. The following decoction is highly recommended in heart diseases complicated with endocarditis, mitral regurgitation, pericarditis, angina etc:—Take of thick bark of Arjuna ½ tola, cane sugar 2 tolas and cow's milk (boiled) 8 ozs. The bark should be well-pounded and mixed with milk and sugar and administered every morning on empty stomach; this treatment should be continued for some length of time and a regular use for a year is said to entirely remove all distressing symptoms. With milk, treacle or water it is given in fractures and contusions with extensive ecchymosis, as it is said to promote union of fractures. Ayurvedic physicians recommend the use of Arjuna bark in derangement of all the three humours, *Kafa*, *Pitta* and *Vayu*:—In the treatment of haemoptysis Charaka prescribes pulverized Arjuna bark internally along with equal quantity of pulverised red-sandalwood, sugar and rice water. Externally its leaves are used for covering ulcers and sores. Bagbhat speaks of an *ointment* prepared of Arjun-bark and honey as useful in acne. Sushruta found the *decoction* of Arjuna bark and white sandalwood prepared in the usual way, effective in spermatorrhoea and Harita recommended its decoction in gonorrhoea. The bark well pounded with goat's milk and administered with the same *anupana*, stops the blood in dysentery. Take of the bark of Arjuna 2 tolas, Cow's milk 4 ozs., and water 12 ozs. Boil till the water is evaporated

and administer for heart-disease—(Chakradatta). Powdered Arjuna *bark* soaked and dried seven times successively in the leaf-juice of Adhatoda Vasaka is administered as a linctus well mixed with honey, sugar-candy and cow's ghee in cases of phthisis. It stops the blood in the sputum and clears up the sores and cures them.—(Bhavaprakasha); this mixture is now used by Kavirajees as an *Anupana* in the treatment of consumption along with reduced minerals, such as pearl, coral, gold, lead and mica. In many cases the effect is said to be very encouraging.

941. **Terminalia Belerica** is a tree of the genus Combretaceae (*Sans.*—Vibhitaka ; Anilaghnaka. *Eng.*—Beleric myrobalans. *Hind.*—Bhairah. *Ben.*—Bahera. *Bom.* & *Mah.*—Behada. *Guz.*—Berang. *Tel.*—Tadi ; Tandrakaya. *Tam.*—Tanrik-kay ; Kattu-elupay. *Can.*—Tari ; Shanti-mara. *Mal.*—Tanni. *Kon.*—Goting) common in Indian forests and plains. The beleric myrobalans consist of gallo-tannic acid, coloring matter, resins, and a greenish yellow oil 25 p. c. They are astringent, tonic, expectorant and laxative and useful in coughs, hoarseness, eye-diseases, etc. With salt and long pepper the *pulp of the fruit* is given in the form of *electuary* in cough, hoarseness, sorethroat and dyspepsia ; or it may be taken in the form of a *paste* mixed with butter-milk as a *linctus*, as Chakradatta recommends. Sharangadhara recommends the fruits to be fried in ghee then covered with a paste of wheat-flour and slightly roasted on a fire ; and the cortical portion of the fruits thus prepared is to be kept in the mouth for the relief of sorethroat, cough and catarrh. It is a constitnent of

triphala (the chebulic, beleric and emblic myrobalans) a remedy prescribed in a large variety of diseases. The kernel is said to be narcotic and astringent and is used as an application to inflamed parts. In the Concan the kernel with that of the marking nut is sometimes eaten with betel nut and leaf in dyspepsia. Jogis consider that one *kernel* eaten daily increases the appetite for sexual indulgence. An *oil* expressed from the kernel is used as a dressing for the hair; also as a substitute for ghee; externally it is applied in rheumatism. The *unripe fruit* is purgative. The *ripe fruit* is astringent and is employed in dropsy, piles and diarrhoea; also occasionally in fever. The fully ripe or dried fruit, mixed with honey, is used as an application in ophthalmia. For dry and rough cough a *linctus* made of equal parts of the dried *beheda* pulp, *Saindhava*, *pipli*, black pepper and sufficient quantity of honey to make a linctus, is useful in 1 drachm doses The *gum* is believed to be demulcent and purgative.

942. **Terminalia Catappa,** T. Myrobalans is a tree (*Eng.*—the Indian almond. *Hind.*—Jangli-badam. *Fr.*—Badanier de Malabar. *Ger.*—Achter Cattapenbaum. *Ben.*—Bangla-badam. *Bom.* & *Mah.*—Desi badam. *Tel.*—Ingudi; Tapasataruvu; Natu-badamu. *Tam.*—Amandi-maram. *Can.*—Badami-mara. *Mal.*—Katappa; Adamaram. *Kon.*—Hatbadam) commonly cultivated throughout India; wild in the lowlands of Trans-Gangetic Peninsula. The seeds contain 50 p. c., of oil resembling almond oil in flavour and mildness; and is used as a substitute for almond oil. It is composed of stearine and oleine. The bark and leaves contain tannin. The bark yields a black pigment used by some to colour their teeth. The *bark* is astringent

and the *fruit* is similar in action to almond. The *ash of the bark* contains potash and tannin. The *juice* of the young leaves is employed to prepare an *ointment* for scabies, leprosy and other cutaneous diseases and is believed to be useful internally for headache and colic.

943. TERMINALIA CHEBULA; T. Reticulata.

(*N. O.*—COMBRETACEAE).

Sans.—Pathya; Sudha; Bhishak-priya; Haritaki. *Eng.*—Chebulic myrobalan; Ink nut. *Fr.*—Badamier Chebule. *Ger.*—Rispiger Myrobalanenbaum. *Arab.*—Halilaja. *Pers.*—Halil-ahe zarda. *Sind.*—Imachi. *Hind* & *Duk.*—Pile-hara; Harda. *Ben.*—Hora. *Punj.* & *Cash.*—Zard halela. *Guz.*—Himaja; Pilo-harde; Kabuli ·harda. *Mah.*—Hirada. *Tel.*—Karakkaya. (the galls). *Tam.* & *Mal.*—Kaduk-kai. !*Can.*—Anile-kayi. *Cing.*—Aralu. *Malay.*—Buah kaduka.

Habitat.—This tree is wild in the forests of Northern India, the Central Provinces and Bengal, common in Madras, Mysore and in the southern parts of the Bombay Presidency.

There are 4 varieties:—(1) *Survari harade*, which are large, dense and heavy about 2 inches long, yellowish-brown; when cut it contains yellowish or darkish brown, pulp and ston. 2) *Rangari harade*:—these are smaller, less wrinkled and less furrowed than the above variety; in length about an inch; the epidermis is yellow; when cut it presents a yellow dried pulp and a stone. The pulp is less astringent than that of *Survari harade.* (3) *Bala harade* are smaller than the above two varieties. Their color is deep brown or black; highly wrinkled, dark or

brown epidermis. Their pulp is dark and homogeneous; there is no stone. (4) *Java harade*; these are the smallest of all. Other characters are similar to those of *Bala harade.*

Parts Used.—The dried fruits—myrobalans and galls.

Constituents.—Myrobalans contain astringent principles—tannic acid 45 p. c., and gallic acid, mucilage, a brownish yellow colouring matter; chebulinic acid which when heated in water splits up into tannic and gallic acids.

Action.—Myrobalans are a safe and effective purgative, astringent and alterative. The unripe fruits are more purgative and the ripe are astringent. *Rangari harade* used by tanners and dyers are alterative, stomachic, laxative and tonic. *Survari harade* is a valuable purgative. *Bal harada* is a mild and safe aperient, and antibilious, though astringent. The ripe fruit is considered as purgative removing bile and phlegm, and to adjust bile (*pitta*).

Uses.—Chebulic myrobalans are used (especially the *Rangari* variety) in fevers, cough, asthma, urinary diseases, piles, worms and rheumatism. *Bala harade* is highly useful in chronic diarrhoea and dysentery, flatulence vomiting, hiccup, colic and enlarged spleen and liver. Brayed with sugar and water it is used in ophthalmia. *Java harade* is used similarly. A *cold infusion* of it is used as a gargle in sore mouth. Brayed in rose-water it is a cooling application to swellings. Chebulic myrobalans are extensivelly used in combination with belleric and emblic myrobalans under the name of *triphala* and

also as adjuncts to other medicines in numerous diseases; for example:—(1) Take of *Triphala*, long pepper, each 1 oz, Cinnamomum cassia, cardamoms, each 4 drs, and Balsamodendron mukul 5 ozs. Mix and make a powder. Dose is 1 to 2 drs. Used in rheumatism affecting the loins and sacrum. (2) Take of *Triphala* 8, Cinnamomum cassia 6, Valeriana hardwickii 6, long pepper 4, nutmeg 6, salt 6, Cubeba officinalis 8, Olibanum gum 8, and Pistacia khinjuk 4 parts. Mix and make a *paste*. Dose is ½ to 1 dr; used in loss of memory, giddness faintness etc. (3) A compound decoction named *Pathyadi Kvatha* is recommended by ancient writers and it consists of chebulic myrobalans, pulp of Cassia fistula, root of Picrorrhiza kurroa, root of Ipomoea turpethum and emblic myrobalans equal parts, in all two tolas. Dose is 2 to 4 ounces as a purgative. Nowadays senna and rhubarb are added to the above preparation. (4) Another *decoction* called by the same name and containing the three myrobalans, chiretta and *gulancha* is used in doses of 1 to 2 ounces as alterative, bitter tonic and antiperiodic; said to be useful in dyspepsia, feverishness and hemicrania. Or (5) a decoction made of 5 drachms of powdered *harade*, 1 drachm of powdered rhubarb root and 4 ounces of water, boiled for 10 minutes, is also a nice purgative. (6) As a *laxative powder* 1 drachm each of *harade*, fennel and sugar, taken once or twice daily acts well. (7) Take of Chebulic myrobalans 5, Belleric myrobalans 4, Glycerrhiza glabra 5, Coriander seeds 6, Foeniculum vulgare 6, Anise seeds 4, Rose buds 5, and sugar 10 parts. Mix and make a *powder*. Dose is 10 to

20 grs. Used in rheumatism. (8) Take of Chebulic myrobalans 3 drs., *Bala harade* 4 drs., Raisins 5 drs., Belleric myrobalans 3 drs., almond oil 3 drs., and honey 2 drachms. Mix and prepare a *decoction* in the usual way. Dose is 3 to 6 ounces. Used as an aperient in head affections, hepatic congestion, dyspepsia, abdominal complaints and biliousness. (9) Take of *Post halila Kabli, Post halila Zard* (Chebulic myrobalans), Emblic myrobalans, Belleric myrobalans, and small black chebulic myrobalans, of each 3 parts, R.se buds, *Sanai* (Senna ?) and water melon, each 1 part, and dried ginger 2 parts. Mix with oil of almonds and sugar-candy and make into the consistency of *syrup*. Dose is 1 to 2 tolas; used in headache. As alterative tonic for promoting strength and preventing the effects of age, chebulic myrobalan is taken every morning with salt in the rainy season, with sugar in autumn, with ginger in the first half of winter, with long pepper in the second half, with honey in spring and with treacle in the two hot months. These adjuncts agree best with the humours that are liable to be deranged in the different seasons(—Chakradatta). Recently Mr. P. Apery has brought to the notice of the medical profession in Europe the value of this drug in dysentery, choleraic and chronic diarrhoeas. He administers it in pills of 25 centigrammes (nearly 4 grains) dose is from 4 to 12 pills or even more in the 24 hours. For worms *Ilaz-ul-Gurba* recommends a confection made of the following substances :—Take of *Post halila kabli* (skin of fully matured chebulic myrobalans), skin of belleric myrobalans, Phyllanthus emblica black, and Embelia ribes, each 30 *mashas*,

white Ipomoea turpethum 3 *mashas*, Mallotus phylippinensis, *Kist tulkh*, and salt, each 9 *mashas*, and honey sufficient quantity. Make a confection; dose is 10 *mashas*. The same recommends a compound pill for syphilis and it is made of small black myrobalans 12 *mashas*, black pepper 8 *mashas*, and of green sulphate 1 *masha*. Make pills in the juice of lemon. Dose is one pill about the size of a wild plum; twice daily for 40 days. The following are also very beneficial.—(1) Take of myrobalans bruised 6, cinnamon or cloves bruised 1 drachm, water or milk 4 ozs; boil for ten minutes, strain and set aside till cold. This quantity taken at a draught generally produces in an adult 3 or 4 copious stools without griping, vomiting or other ill effects. It is well adapted for ordinary cases of constipation in enlargements of the abdominal viscera and in other states where aperients are required. A *conserve* is made of the large, fully ripe fruit which is considered a good digestive. Also a *confection* made of equal parts of the three myrobalans (chebulic, emblic and beleric), *pipli*, black salt and sugar is a nice digestive. Dose is from ½ to 1 drachm. As a digestive and liver alterative equal parts of powdered *harade*, ginger, aniseed and *saindhava* is useful in doses of 10 grains twice daily before food. A Unani confection known as *Ithrphal* is used in rheumatism, constipation, heaviness of head, nasal catarrh, "cold in the eye", sciatica etc. It has been tried and found beneficial in cases of chronic constipation.—(Ind. Drugs Report, Madras). It is made up of Chebulic myrobalans, Emblic myrobalans, Chebulic myrobalans (unripe and small variety), 1 palam each.

powder, grease it with almond oil, add honey and turn into *confection*. Dose is one tola at bed time, 2 hours after meals—(I. D. R., Madras). As laxative and alterative useful in dyspepsia and constipation, a pill known as *Pranadi Gutika* is recommended of whicht he chief ingredients are:—chebulic myrobalans, dry ginger, piper nigrum, piper longum, root of piper longum and sugar. Dose is 1 to 4 tablets to be taken twice a day with water. A compound powder called *Narsimha Churna* is said to possess stimulant, tonic and alterative properties and useful in sexual debility, neuralgia, dyspepsia and syphilis ; it was recently tried in cases of myalgia and atonic dyspepsia and found to give relief--(Ind. Drugs Report, Madras). Its chief ingredients are three myrobalans (Chebulic, beleric, and emblic), *Trikatu* (the three acrids), Sesamum indicum, and Semicarpus anacardium. Dose is 10 to 40 grains, to be taken twice a day with ghee or sugar —(I. D. R., Madras). Equal parts of dried myrobalans in combination with emblic and beleric myrobalans and catechu, both finely powdered and rubbed into a thick *paste* with sufficient ghee or some bland oil, make an excellent *ointment* as an application to aphthae for chronic ulcerations, ulcerated wounds and many skin diseases attended with profuse discharge. Such and other ointments of Chebulic myrobalans are substitutes for the B. P. gall-ointments, and used externally as an astringent in piles. For blepharitis an ointment made of equal parts of Chebulic myrobalan (when as big as a raisin) and Quercus infectoria, and sufficient quantity of pure water is recommended in Unani Works. A decoction of chebulic myrobalan is a good astringent wash useful in bleeding

piles and some vaginal discharges. A fine paste made by rubbing the fruit with a little water mixed with carron oil and applied to burns and scalds effects more rapid cure than with carron oil alone. Finely powdered it is used as a *dentifrice* useful in carious teeth, bleeding and ulcerations of gums. Coarsely powdered and smoked in a pipe it affords relief in a fit of asthma.

944. **Terminalia Citrina** belonging to the same Family and met with in Assam, East Bengal and Burma and known as *Kavya* and *harira* is similar in medicinal properties to those of the chebulic myrobalan.

945. **Terminalia Paniculata,** (*Bom.*—Kenjal. *Tam.*—Pe-karakai. *Tel.*—Neemeeri. *Can.*—Honal; Huluva; hunab) is found in Malabar, Lower hills from Bombay to Cochin, Nilgiri and Coorg mountains. The *juice* (4 tolas) of the fresh *flowers* rubbed with root of Cocculus Villosus given every hour, is used as a remedy in cholera; and in poisoning with opium 4 tolas of the juice with an equal quantity of *guava* bark-juice is given frequently. In parotitis the juice with ghee and *saindhava* is applied locally.

946. **Terminalia Tomentosa** or T. Crenulata; T. Glabra; T. Alata or Pentaptera Tomentosa (*Sans.*—Asana. *Hind.*—Asan, *Ben.*—Piasal. *Bom.* & *Mah.*—Ain. *Tam.*—Karuppo-mara. *Tel.*—Maddi. *Can*—Karimatti; Banapu; Aini. *Mal.*—Thambaon) is met with in the Deccan, U. P., Nepal and Sikkim. It contains much calcareous matter, yielding an ash which is used by chewers of the betelnut. It yields a gum used as a cosmetic and incense. The astringent *bark* is used internally as *decoction* (1 to 10) in atonic diarrhoea in 2 ounce

doses, and externally for indolent ulcers. The *bark* of this is found to contain:—insoluble matter 64.0, extractive matter (non-tannin) 4. 4., tannin 20. 2; ash 6. 7. p. c. On the basis of the above analysis, an extract of the bark containing 20 per cent of moisture should contain about 65.6 p.c., of tannin and 14. 4 p. c. of soluble non-tannins.

Tetranthera Apelata; T. Roxburghii; T. Lavrifolia—See Litsea Sebifera.

947. **Thalic trum Foliolosum** is a tall perennial rigid herb of the genus Ranunculaceae(*Sans. Ben. & Mah.* Trayamana. *Hind.*—Pilijari ; Gurbiani. *Bom.*—Mamirana. *Eng.*—Gold thread. *Pers.*—Asprak) found on the temperate Himalaya and Khasia Hills. The root is like gentain very bitter and tonic and contains a compound of the alkaloid Berberine. It is said to be useful in jaundice, flatulence and visceral obstructions. As a *collyrium* it clears the sight. A *cold infusion* of the root is used as a *lotion* for ophthalmia. It is also a valuable tonic and antiperiodic useful in fevers and atonic dyspepsia. The root also possesses aperient and diuretic properties; a good substitute for rhubarb ; dose is 5 to 10 grains; of the tincture (1 in 8) the dose is 20 to 30 minims and of the liquid extract 5 to 20 minims. A *snuff* prepared from it is said to clear the brain ; it is used in coryza ; it also relieves toothache. Five grains of the *powder* or two grains of the *watery extract* given thrice daily acts on the bowels and is given with benefit in intermittent fevers and in convalescence from acute diseases. Dose of the infusion (1 in 40) is ½ to 1 ounce.

948. **Thea Assamica** (*Eng.*—Tea plant. *Ben.*—Cha-gaca. *Fr.*—The. *Ger.*—Thee) is a shrub found wild

in upper Assam and is considered the parent species of all cultivated varieties of the tea plant. The dried leaves of the tea plants contain in addition to what is mentioned under "Camellia Theifera", page 148, insoluble inorganic matter 50 p. c., and ash (containing iron, potash, silica alumina and magnesia) 4 p. c. Tea is astringent, especially if long infused and gently exhilarating. Its excessive use is easily apt to produce dyspepsia and nervousness. Tea is often aromatized with sweet-scented flowers or leaves of rose, jasmine etc. Tea in moderate doses is used as a nervine stimulant and restorative like coffee in ordinary fatigue. In overdoses it has a degenerative effect on the nervous system analogous to what follows even the moderate dose of alcohol—See also Camellia Theafera.

Thespasia Lampas.—See Hibiscus Lampas.

Thespasia Populnea.—(*Sans.*—Parisa. *Ben.*—Palas pipul)—See Hibiscus Populnea.

949. **Thevatia Nerifolia** or Cerebera Thevatia is a plant of the genus Apocynaceae (*Sans.*—Hapusha. *Eng.*—the Exile or Yellow Oleander. *Hind. Guz. & Duk.*—Pila-kaner. *Ben.*—Kolkephul. *Mah.*—Pivala-kanher; Sherani. *Bom.*—Thivati. *Tel. Mal. & Tam.*—Pachchai-alari) commonly cultivated as an ornamental shrub in gardens in the plains. The seeds contain 41 p. c., of a bland oil, thevatin, theve-resin, the active principles and pseudo-Indican. The bark contains thevetin. The oil of the seeds consists of triolein 63 p. c., tripalmatin 23 p. c., and tri-stearin 27 p. c. Thevetine, a poisonous glucoside is obtained from the cake after expression of the oil, The fixed oil when pure is quite inert. The *bark* is bitter and powerfully cathartic;

antiperiodic in small doses, 2 grains of the *powdered bark* or 10 minims of the *tincture* being equal to an ordinary dose of cinchona; but its use is attended with considerable danger. In large doses (in 30 to 60 minims of the tincture) it is emetic and in still larger doses it is an acrid poison. The *seeds* are used as a cattle poison. The *milky juice* of the plant is poisonous. The *oil* is used externally in skin diseases.

950. Thymus Serphyllum; T. Vulgaris is a species of Labiatae (*Eng.*—Wild Thyme; garden thyme. *Hind.*—Ipar. *Pers.*—Hasha. *Punj.*—Masha) is found on the temperate Himalaya from Cashmere to Kumaon. The leaves contain a volatile oil, tannin and gum. The *o'eum thyme* or *thymol*, the volatile oil distilled from the leaves is deodorant and antiseptic and is a remedy for tooth ache; and *decoction of the leaves* cures itch and skin diseases. For further particulars see B. P.

Tiagidium Indicum—See Heliotropium Indicum.

Tinospora Crispa—See Cocculus Villosus.

951. Tinospora Cordifolia; Menispermum cordifolium (*Sans.* & *Tel.*—Guduchi. *Hind.*—Gurach. *Mah.*—Guloe)—See Cocculus Cordifolia.

Tinospora Crispa—See Cocculus Villosus.

Tinospora Malabaricra—See Cocculus Cordifolia.

952. Tinospora Tomentosa is a climbing shrub of the Menispermaceae genus (*Sans.*—Sudarsana. *Ben.*—Padma-gulancha; Urti-poorti) met with in tropical thickets in Bengal. It possesses the tonic properties of the common *Gulancha*.

953. Toddalia Aculeata; T. Asiatica; T. Rubicaulis; T. Nitida is a climbing shrub of Rutaceae

order (*Sans.*—Kanchana ; Dahana. *Hind.*—Jangli-kali-mirch. *Ben.*—Kadatodali. *Bom.*—Limri. *Nepal.*—Me-inkara. *Tel.* Konda-Kashinda. *Tam.*—Milakaranai. *Can.*—Kada-hakukare. *Mal.*—Kar. *Kon.*—Galayi. *Cing.*—Kadur miris) found in the lower Himalaya, Bhutan and Western and Southern India. The bark contains a resin, essential oil and a bitter principle "berberine". The leaves distilled yield a yellowish green oil of odour like that of citron, containing citronella-aldehyde. The fresh *root-bark* and the *whole plant* are pungent and aromatic ; the former is given in *infusion* (1 in 20) in doses of 1 to 2 ounces or *tincture* (1 in 10) in 1 to 2 drachms or *fluid extract* in ½ to 1 drachm doses, as stimulant, tonic, carminative, diaphoretic, antiperiodic and antipyretic ; it is used in diarrhoea, constitutional debility, in convalescence after fever and other exhausting diseases ; also in fevers, especially of that sort of remittent which is commonly called the hill and jungle fever, (probably malarial). An *infusion of the bark* was tried in "several mild cases of malarial fever in the out-patient department (of the Madras General Hosital) with very beneficial results"—(Ind. Drugs Report, Madras). It is said to be superior to quinine or Warberg's tincture as antiperiodic and antipyretic, to gentian and calumba as tonic, and as diaphoretic to pulvis Jacobi. The *leaves* are also sometimes used for the same purpose. The fresh leaves are eaten raw for pains in the bowels. The *unripe berries* are pickled and eaten. The *unripe fruit* and *root* boiled with oil make a stimulating *liniment* for rheumatism.

954. Torula Saccharomyces ; T. Cerevisae is a

plant belonging to the Fungus Order with the aid of which yeast is produced. It is used in diabetes, diarrhoea, scurvy, typhoid fever, and also as antiseptic poultice. It is a peculiar product of the fermentation of malt liquors produced by aid of alcoholic fermentation of saccharine fluid by this fungus. It occurs in two forms, the top of surface yeast, a semi-fluid frothy mass cellular of a peculiar odour. The bottom or sediment is yeast. Dose is ½ to 1 oz. In action it is tonic, stimulant and laxative.

955. Tradescantia Axillaris or Cyanotis Axillaris is an annual shrub (*Hind.*—Baghanulla ; Soltraj. *Bom.*—Itsaka. *Tel.*—Golagandi. *Tam.*—Nirpulli) found throughout India in the plains. The juice of the plant is externally applied in cases of ascites, especially when combined with a little oil. The seeds contain a little fat, albuminoids, 16 p. c. carbohydrates 24 p. c., cellulose 9 p. c., and ash nearly 9 p. c. They have proved to be a valuable resource in times of famine.

956. Tragia Involucrata; T. Cannabina of Euphorbiaceae Order (*Sans*—Vrishi-kali ; Kasaginnie. *Hind.*—Barhanta. *Ben.*—Bichuti. *Bom* & *Duk.*—Kanch-kuri. *Mah.* & *Kon.*—Khajkoth. *Can.*—Haligilu. *Tam*—Kanchuri ; Sirukanchni. *Tel.*—China dulo gondi ; Tella duradagondi. *Mal.*—Sheriganam) is found everywhere in India. The *root* is valued in febricula and in itching of the skin. It is used in the form of *paste* to aid the extraction of guinea-worm. A paste with *tulsi* juice is also employed as a cure for itchy skin eruptions—(Dymock). The *root* is diaphoretic and given in *decoction* in doses of 2-4 ounces in fevers when the extremities are cold and also for pains in the legs and arms. A decoction of the root (1 in 10) was

tried and found useful in relieving bronchitis and the attendant fever--(Ind. Drugs Report, Madras).

957. **Trapa Bispinosa;** T. Natans or T. Bicornis is an aquatic plant of the genus Onagraceae (*Sans.*—Sringataka. *Eng.*—the Indian water Chestnut. *Fr.*—Noix aquatique Corniole. *Ger.*--Gemeine Wassernuss. *Hind.*—Singhara. *Ben.*--Paniphal. *Bom.* & *Mah.*--Singada. *Punj.*—Gaunri. *Tam.*--Pauri-mattaisal. *Mal.*--Karimpolam) found commonly floating on the surface of lakes, tanks, and pools in Kashmir and also other parts of India. In Kashmir the water-nuts form a staple farinaceous food. The fruit or nut or seed contains manganese and starch. It is nutritive, tonic and cooling. The *fresh fruits* are edible; dried ones are baked and eaten. The nutritive value of the kernels is shown by analysis to be equal to that of rice. Medicinally the *fruits* are considered as refrigerant and useful in bilious affections with diarrhoea. With milk it is used in nervous and general debility; seminal weakness and leucorrhoea. As *confection* made of it is given in 2 to 4 dr. doses. In menorrhagia Hakims prescribe it as a *compound powder* thus:--Take of Trapa Bispinosa 2 tolas, Kamarkus (Kino) 1 tola and white sugar 3 tolas. Divide into 7 parts and give 1 part every day. The upper portion of the stem was used in *poultices* as a discutient and the expressed *juice* in eye-diseases.

958. **Trewia Nudiflora;** T. Macrophylla of the genus Euphorbiaceae (*Sans.* & *Hind.*—Pindara. *Ben.*—Pittori. *Mal.*—Sivani. *Can.*—Katkamba) is found in various parts of India. The *root* contains resinous matter and fat. *Decoction* of root (1 in 10) is used as stomachic

and alterative in flatulence, gout, rheumatism etc.

959. **Trianthema Decandra** of the Umbelliferae Order (*Ben.*—Gada-Cani. *Duk.*—Bhees khupra. *Tam.*—Vallay-sharunnay. *Tel.*—Tella ghalijeroo. *Can.*—Jaija-soppu) found in the Deccan Peninsula. The *root-bark* is aperient; its *decoction* is given in asthma, hepatitis and suppression of the menses. The *root* ground up with milk and given internally is said to be a specific in orchitis. The *juice of the leaves* dropped into the nostrils relieves one sided headache—(Watt).

960. **Trianthema Monogyna**; T. Obcordata; T. Pentandra belonging to Order Umbelliferae (*Sans.*—Punarnava. *Hind.* & *Duk.*—Nasur Jaaghi. *Ben.*—Sabuni Lal & Lovet Sabuni; Gadc-Cunya. *Punj.*—Bishkapra. *Guz.*—Satudo. *Mah*—Vish khapra. *Tam.*—Sharvalay kiray. *Tel.*—Ambatimaddu; Ghalijeroo. *Can.*—Muchugoni) is found throughout tropical India, low country and Ceylon. The *root* contains a glucoside similar in properties to Saponin. In action it is cathartic and irritant. The root when fresh is sweet. The *dried root* is given in *powder* with ginger as cathartic. As *infusion* (1 in 20) it is given in doses of 1 to 2 ounces in constipation, jaundice, strangury and dropsy. It is also used in torpid liver, asthma and amenorrhoea. The *plant* is boiled and eaten as a vegetable.

Tribulus Aquaticus.—See Trapa Bispinosa.

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961. TRIBULUS TERRESTRIS; T. Lenuginosus; T. Zeylanicus.

(*N. O.*—ZYGOPHYLLEAE)

Sans.—Ikshugandha; Gokshuri. *Eng.*—Small Caltrops.

Hind. & *Ben.*—Gokhru. *Mah.*—Lahan Gokhru. *Tel.*—Pallern-mullu. *Tam.*—Cherunerinche. *Mal.*—Nerungil; Nerinnil. *Can.* & *Kon.*—Negil-mullu. *Cing.*—Trimen; Sambunerinchi.

Habitat.—This trailing plant is common in sandy soil throughout India, plentiful in the United Provinces and in Madras. The carpels or cocci of the fruit resemble a cloven hoof of the cow. This variety is known as *mitha* (sweet) *gokhru* as distinguished from *kudva* or *moto gokhru* (Pedalium Murex).

Parts Used.—The fruit and root.

Constituents.—The extract of the powdered fruit was found to contain an alkaloid a resin, fat and mineral matter 14 p. c.

Action.—The plant and the dried spiny fruit are esteemed as cooling, demulcent, diuretic, tonic and aphrodisiac. The stems are considered astringent. Its action closely resembles that of Buchu and Uvaursi.

Uses.—The entire plant including the root and the fruit is used in medicine. The *fruit* is covered with stout blunt spines. The *plant* and the dried spiny fruits are used in *decoction* or *infusion* in cases of spermatorrhoea, phosphaturia, diseases of the genito-urinary system such as dysuria, gonorrhoea, gleet, chronic cystitis, calculous affections, urinary disorders, incontinence of urine, gout, and impotence; also in uterine disorders after parturition and to ensure fecundity; and in cough and diseases of the heart. Water rendered mucilaginous by the plant is drunk as a remedy for impotence and an infusion of the stem is administered for gonorrhoea. It is generally given with hyoscyamus and opium. Chakradatta recommends a decoction of the fruits with the addition of

impure carbonate of potash to be given in painful micturition. A *compound powder* called *Gochurathi Churnam* is popular in all urinary diseases; it is made up of Tribulus terrestris 9 tolas, Cubebs, Mesua ferrea, Rhei radix, and Potassium nitrate, each 3 tolas. Powder and mix. Dose is 10 to 20 grains. This drug "was given a good trial in cases of Bright's disease with dropsy; all the patients derived much benefit by its use. It was also combined with bdellium in a patient suffering from gonorrhoeal rheumatism with cystitis. The patient recovered without interruption"–(Ind. Drugs Report, Madras). A *decoction* of the entire plant is given with *Silajatu* and honey in the same affection. Equal parts of *Gokhru* and sesamum seeds taken with goat's milk and honey is said to cure impotence arising from vicious practices. Bhavaprakasha gives the composition of an *electuary* known as *Gokshuradyava leha,* recommended in painful micturition, suppression of urine, bloody urine, calculous affections etc; it is prepared as follows:—Take of the entire plant of Tribulus terrestris 12½ seers, water 64 seers and boiled till reduced to one-fourth. To the strained decoction add 6¼ seers of sugar and again boil till reduced to the proper consistence for an electuary; then add the following substances in fine powder:—ginger, long pepper, black pepper, cinnamon, cardamoms, flowers of Messua ferrea, *tejpatra* leaves, nutmeg, bark of Terminalia arjuna and cucumber seeds each 16 tolas, bamboo manna ½ seer, and prepare an electuary. It is given in doses of 2 tolas. A compound pill known as *Gokshuradi Guggula* is prescribed for albuminuria, dysuria, calculi, gonorrhoea and rheumatism. The chief ingredients in it are *gokshura, guggula, trikatu* and *triphala*

dose is 1 to 4 pills of 6 grains each three times a day. These were tried in cases of gonorrhoeal rheumatism and gleet and found beneficial--(Ind. Drugs Report, Madras). The following *compound decoction* is used as a cooling, soothing, aphrodisiac in cases of impotence resulting from gonorrhoea with painful micturition. Take of *Gokhru* 10 parts, *Trikatu* (long pepper, black pepper and ginger) 5, Cinnamon 4, Cardamoms 4, Saffron 1, *Tejapatra* 2, Nutmeg 3, Lettuce 3, Bonduc nut 4, and Bamboo manna 5 parts. Mix and make a decoction. Dose is 2 to 6 drachms. The following are a few simple home remedies:--(1) Take of *Gokhru* 10, Hygrophila spinosa 5, Glycyrrhiza glabra 6, Withania somnifera 6, Hyoscyamus albus (henbane) 5, Curculigo orchioides 6, Mace 4, Eulophia campestris 6 parts. Mix and make a powder. Dose is 10 to 15 grains; used in seminal debility. (2) Take of *Gokhru* and Impure carbonate of potash 5 parts each. Make a decoction in the usual way. Dose is 1 drachm; used in painful micturition. (3) Take of *Gokhru* 10, Carbonate of iron and lime 6, Cinnamomum cassia 5, Cardamoms 6 and sugar 10 parts. Mix and make a powder. Dose is 10 to 15 grains; used in jaundice. (4) Take of *Gokhru* 4 drs., Terminalia chebula 3 drs., Oxalis corniculata 3 drs. Mix and reduce the whole to a fine powder. Dose is ½ to 1 drachm three times a day; used in gonorrhoea, gleet, and genito-urinary diseases. (5) Take of *Gokhru* 12, Spilanthes oleracea 9, Camphor 9, Balsamodendron mukul 9, Opium 1. and honey sufficient quantity. Mix and make a pill mass. Dose is 5 grains; used in gleet and painful diseases of the bladder and urethra.

962. **Trichillia Emetica**; T. Trifoliata belonging to Chinopodiaceae (*Arab.*—Jauzel-kai. *Eng.*—Emetic nut. *Tam.* & *Tel.*—Walurrsi) is met with in Malabar, Travancore and Ceylon. The *bark* contains resin, saponin and tannin. It is stimulant and expectorant in *decoction* (1 in 10) in doses of 2 to 4 drachms. It acts as a fish poison. The fish so caught is said to be not unwholesome to eat. The *fruit* is used in hair washes to kill lice to remove freckles and to cure itch.

963. **Trichodesma Indicum** or Borago Indicum of the genus Boargineae (*Hind.* & *Ben.*—Chhota-kulpha. *Punj.*—Katmandoo. *Sind.*—Gaozaban. *Santal.*—Hetmudia. *Cash.*—Ratisurkh. *Mah.* Laharzingi—na kalpa. *Tam.*—Kazuthai-thumbai. *Tel.*—Gusva-gutti) is common throughout India, except Bengal plains. The *leaves* and *root* are used in snake-bites; also considered diuretic. A *cold infusion* of the leaves is considered depurative; the *plant* is used as emollient *poultice*.

Tricholepis Glaberrinae—See Echinopus Echinatus.

964. **Tricholepis Procumbens** (*Pers.*—Kangari-supheda; Asphari-i-bari. *Arab.*—Shankat-ul-beda. *Hind.* & *Bom.*—Badavarda. *Mah.*—Sakayi) is a herb of the Compositae Order. Its constituents are a green volatile oil, an acid resin, fat, an alkaloid and gum. A *decoction of the flower heads* (1 in 20) is given in doses of 1 to 2 ounces as stomachic, aperient, febrifuge and tonic in fevers, general debility, dyspepsia, flatulence, nervous depression etc. As a mucilage it is used in coughs.

965. **Trichosanthes Anguina** is a Cucurbitacean

species (*Sans.*—Chinchinda. *Hind.*—Chichonda. *Eng.* Snake-gourd. *Ben.*—Chichinga. *Bom. Mah. & Kon.* Padavala. *Tel.*—Potlakaya. *Can.*—Padavalu kayi. *Punj.*—Galartori; Pandol; *Tam.*—Puttla) cultivated throughout India. The *seeds* are considered a cooling medicine. The *fruits* are cooked and eaten when green and when ripe they are purgative. Except in the fruit this drug agrees altogether with T. Cucumerina of which it is probably a cultivated form.

966. **Trichosanthes Cordota** (*Ben.*—Bhu-kumara; Bha-khumba; Patol) is found from the base of the Eastern Himalaya in Sikkim and Assam to Pegu. The large tuberous *roots* are used as a valuable tonic and as a substitute for Calumba. In Patna the *dried flowers* are believed to be stimulant in doses of 2 to 5 grains (Irvine). In Decca the *root* dried and reduced to *powder* is given in doses of 10 grains.

967. **Trichosanthes Cucumerina** (*Sans.*—Patol. *Hind. & Ben.*—Ban-patol. *Fr.*—Trichosanthes du Malabar. *Ger.*—Gurkenartiga Haarblume. *Bom.*—Jangli padavala; Ran-parval. *Tel.*—Chaynd-potla. *Tam.* Kattup-pepudal. *Mal.*—Kaippam-patolam) is a species found in Malabar having an unpleasant odour. The *root* is purgative and tonic; *infusion of tender shoots* and dried capsules is aperient; the expressed *juice of the leaves* is emetic and the *seeds* are anthelmintic and antiperiodic. Externally leaf-juice is applied to the bald patches of alopecia. Hakims consider the plant as cardiacal, tonic, alterative and antifebrile. In obstinate cases of fever an infusion made of 180 grains each of the plant and coriander infused for

a night is recommended. This quantity is given morning and evening with honey added to the strained liquor. It makes two doses, one of which is taken in the morning and the other at night—(Makhzan). In Bombay the *plant in decoction* with ginger, chiretta and honey is given as febrifuge, laxative and alterative. A decoction of *patol* leaves and coriander is given as febrifuge and laxative in bilious fevers. In the Koncan the *leaf-juice* is rubbed over the liver in liver congestion or over the whole body in remittent fevers—(Dymock). The expressed *juice of the root* is drunk in doses of 2 ounces as purgative. But it is a strong gastro-intestinal irritant. *Seeds* are given in disorder of the stomach. The *unripe fruit* is very bitter and dried capsules are given in *infusion* or in *decoction* with sugar to assist digestion.

968. Trichosanthes Cuspida is a species found in Bengal and the East Indies, the *root* of which is a drastic purgative and the expressed *juice* is emetic.

969. Trichosanthes Dioica is another species (*Sans.*—Patola. *Eng.*—Wild snakeguard. *Fr.*—Trichosanthes contourne. *Ger.*—Schlangenfruchtiga Haarblume. *Hind.*—Palwal. *Ben.*—Patol. *Mah.*—Kadu-padvala *Tel.*—Adavi-patola. *Tam*—Peyu-padal. *Can.*—Kahi-padavala. *Mal.*—Kattu-potolam. *Kon.*—Kadapaddoola) common in Bengal and cultivated in Northern India and the Punjab. The *unripe fruit* of this climbing plant is generally used as a culinary vegetable and is very wholesome, specially suited for the convalescent. The *tender tops* are also used as a pot-herb and are regarded as tonic and vermifuge. The *stalk in decoction* is a reputed

expectorant. Chakradatta recommends a decoction *Patoladi Kvatha* in fevers; it is prepared thus:—Take of Patola leaves, red sandalwood, root of Sanseviera zeylanica, Picrorrhiza kurroa, Stephania hernandifolia and *Gulancha* each one drachm, water half a seer, boil together till reduced to one-fourth. The same recommends another compound decoction useful as a valuable alterative, tonic and febrifuge given in boils and other skin diseases. It is made as follows:—Take of patola leaves, *gulancha,* mustaka, chiretta, nim bark, catechu, root-bark of Justicia adhatoda and Oldenlandia herbaceae equal parts, in all 2 tolas and prepare a decoction in the usual way. The old Ayurvedic physicians placed much confidence in it in the treatment of leprosy. A popular compound powder known as *Patoladya Churnam* is pre pared thus:—Take of the root of Patola, turmeric, baberang seeds, Kamala powder and the three myrobalans, two tolas each, cinnamon and the root of the indigo plant three tolas each, Ipomoea turpethum four tolas; powder the ingredients finely and mix. This is used as a drastic purgative in jaundice, anasarca and ascites; Dose—about 1 drachm with cow's urine. After the use of this medicine, light food only such as gruel should be taken.

970. Trichosanthes Incisa is a species found in Bengal whose *root powdered* and mixed with oil of Azadirachta Indica is used in ulcers—(Chak ravarthy.)

971. Trichosanthes Laciniosa (*Sans.*—Dindisa. *Ben.*—Dherasa. *Fr.*—Trichosanthes lacinie. *Ger.*—Handtheilige haarblume) is a species found in Bengal and the East Indies, and whose *fruits* and *tender shoots* are used as stomachic and laxative.—(Chakraverthy).

972. **Trichosanthes Nerviflora** is yet another species (*Hind.*—Palval) found in Bengal, Deccan, West India, Coorg and other tropical regions. The medicinal properties etc., are similar to those of T. Dioica. The *fruits* are used externally in epilepsy and mental troubles.

973. **Trichosanthes Palmata** is a species (*Sans.*—Mahakala. *Hind.*—Lal-Indrayan. *Ben.*—Makal. *Arab.*—Ambsghola; Hanzal-e-ahmara. *Pers.*—Hanzal-i-surkha. *Bom. Kon.* & *Mah* —Kaundala. *Duk.*—Gudapandu. *Tel.*—Avvaguda; Kakidonda. *Tam.*—Shavari-pazpam; Kurattai. *Can.*—Kake-mandali; Avagude hannu. *Mal.*—Kokatonti) found in Bengal and Southern India. The *rind* and *pulp* contain an amorphous bitter principle "Trichosanthin" resembling Colocynthin. It is soluble in water and alcohol. The green pulp in the interior of the fruit contains a coloring matter. The *fruit* is a violent hydrogogue cathartic. It is considered poisonous; mixed with rice it is employed to destroy crows. The *fruit* is smoked in asthma. It is used as a fumigatory in ozena and other discharges from the nose. An *infusion of the root* of this plant and of the three myrobalans and turmuric all equal parts, flavoured with honey is given in gonorrhoea—(Dymock). The cocoanut oil in which the *fruit* is well ground and boiled is a remedy for ear-ache, sores in the ears and nostrils, and ozena in which it is instilled in drops. The *juice of the fruit* or the *root-bark* boiled with gingelly oil is a good bath oil applied to the scalp before bathing for the relief of chronic or recurrent attacks of headache and hemicrania etc. The *oil* is dropped into the ear in cases of otorrhoea. This has been tried and found useful in curing hemicrania—

(Ind. Drugs Report, Madras). The root of this plant and that of Colocynth in equal parts rubbed into paste is applied to carbuncles. The root is poisonous and is used in the pneumonia of the cattle.

974. **Trifolium Indicum** or Melilotous Parviflora is a Leguminous species (*Sans.*—Vana-methika. *Eng.*—Sweet cloves. *Punj.*—Sinjee. *Sind.*—Zir. *Bom*—Aktula mulka. *Arab.*—Aklil-ul-malika; Giahi-kaisara. *Hind.*—Ban-methi) met with in Western Peninsula, Bengal and U. P. The *seeds* are said to be deobstruent, astringent and useful in colic, diarrhoea and other bowel complaints. In infantile diarrhoea they are given as a gruel—(Murray). They are also given in dysmenorrhoea and rheumatism and are considered purifier of blood and used in scrofula.

975. **Trifolium Officinalis** or Melilotus Officinalis is another species (*Hind.*—Aspurk. *Pers.*—Tireer. *Ben.*—Bun-piring) is a native of Nubra and Ladak. The herb is said to possess styptic properties; also employed in bruises—(Watt).

Trifolium Uniflorum—See Psoralea Corylifolia.

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976. TRIGONELLA FOENUM GRAECUM.

(*N. O.*—Leguminosae).

Sans. Hind. Ben. & *Mah.*—Methi. *Eng.*—Fenugreek. *Arab.*—Hulabaha. *Pers.*—Shamlita. *Tel.*—Mentulu. *Tam.*—Vendayam. *Can.*—Menthe-gida. *Mal.*—Uluva; Ventayam. *Kon.*—Metthi.

Habitat.—This annual herb is found wild and extensively cultivated in Kashmir, the Punjab, Bombay and Madras Presidencies.

Parts Used.--The seeds, pods and leaves.

Constituents.—The cells of the testa contain tannin. The cotyledons contain a yellow colouring matter, but no sugar. The seeds contain a foetid, bitter fatty oil 6 p.c., also resin and mucilage 28 p.c., albumin 22 p. c., two alkaloids—choline and trigonelline. The seeds on incineration leave ash 7 p. c., containing phosphoric acid 25 p. c. Reutter has noted the presence of several alkaloids in fenugreek, such as methylamine, dimethylamine, and trimethylamine, as well as cholin, neurin and betain, which are derived from the splitting up of lecithins. Its chemical composition resembles that of cod-liver oil, owing to its containing substances rich in phosphates, lecithin, and neucleo-albumin. It also contains considerable quantities of iron in an organic form, which enables it to be readily absorbed—(Bull. Soc. de Thir. April 9th, 1924).

Action.—The seeds are mucilaginous, demulcent and diuretic; also tonic, carminative, emmenagogue, astringent, emollient and aphrodisiac. The leaves are cooling and mild aperient. Like the alkaloids of Cod-liver oil, the alkaloids of fenugreek seeds stimulate the appetite by their action on the nervous system, or produce a diuretic or ureo-poietic effect.

Uses.—The young plants and aromatic leaves are much used as culinary vegetables and the seeds as a condiment form an ingredient of curry powders. The *seeds* are much used in colic, flatulence, dysentery, diarrhoea, dyspepsia with loss of appetite, diarrhoea in puerperal women, chronic cough, dropsy, and enlargement of the spleen and liver. The *seeds* fried in ghee

and mixed with anisi seeds and salt and made into a *paste* are useful to check diarrhoea. The seeds are generally roasted, powdered and given in *infusion* or weak decoction which is a healthy drink useful in dysentery. With an equal quantity of powder of fried wheat added to the infusion it becomes a good substitute for coffee and a cooling drink. Made into a gruel fenugreek seeds are given as a diet to nurses to increase the flow of milk. Several *confections* under the names of *Methi modaka, Svalpa methi modaka* etc. are recommended for use in dyspepsia, in the diarrhœa of puerperal women and in rheumatism. Bhaishajyaratnavali gives the preparation of *Methi Modaka* thus.—Take of three myrobalans, ginger, long pepper and black pepper, tubers of Cyperus rotundus, nigella and cummin seeds, coriander, bark of Myrica sapida, pachak root, Rhus succedanea, *ajowan*, rock salt, black salt, leaves of Pinus webbiana flowers of Mesua ferrea, *tejapatra*, cinnamon, cardamom, nutmegs, mace, cloves, sandalwood and camphor, one part each ; fenugreek seeds, in quantity equal to all the above ingredients; powder them all and prepare a confection with old treacle. Dose, one to two drachms to be taken in the morning with clarified butter and honey. Dr. P. Blum states that fenugreek can be employed as a substitute for cod-liver oil in every case in which the latter is indicated, such as lymphatism, scrofula, rickets, anaemia, and debility following infectious diseases or neurasthenia, as well as in gout and diabetes in which it may be combined with insulin. The drug is given in the form of powder in doses of two tea-spoonfuls daily in broth, milk, or jam. As an application to the head

they promote the growth of hair which they also prevent from falling off. The *flour of the seeds* is used as a poultice to inflamed parts and is applied to the skin as a cosmetic. In cases of leucorrhoea *pessaries* made of *Methi* are used for the uterus and vagina. A *poultice of the leaves* is useful in external and internal swellings and burns on account of their cooling properties. The leaves boiled and fried in butter are given internally in biliousness.

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977. TRITICUM SATIVUM.

(*N. O.*—GRAMINEAE)

Sans.—Yava; Godhuma. *Eng.*—Wheat. *Arab.*—Hintah. *Hind.*—Gheun. *Ben.*—Gam. *Bom. & Mah.*—Gahun. *Tel.*—Godhumulu. *Tam.*—Godumei. *Can.*—Godi. *Mal.* Kotampum. *Kon.*—Gavu.

Habitat.—Wheat is extensively cultivated in various forms or varieties, in the Punjab, in the United and the Central Provinces, and the Bombay Presidency.

Constituents.—Proteids 12.4, starch 67.9, fat 1.4, fibre 2.5, and ash 1.8 p. c. Wheat contains all the elements necessary for the support of the human frame; hence it is that bread is often and very properly called the "Staff of Life". A grain of wheat can be divided into six parts, *viz.*—(1) the outer skin. (2) the middle skin. (3) the inner skin or cerealin cells containing cerealin. (4) the germ. (5) the gluten cells. (6) the starch granule. The first three parts and the germ go to make bran middlings and pollard and the last two or endosperm are all that white flour contains. The first or outer skin is composed chiefly of fibre. Its main use consists in its

exciting mechanical action in the stomach, and if that organ is healthy, this results in digestion. The second and third skin contains a quantity of salts and acids. These are most essential as food being bone, hair and teeth producers. When the flour meal is being made into bread the ferment cerealin of the inner skin of the grain acts upon the starch granules and converts them into chemical sugar (dextrin) and so renders the bread more digestible. The germ is particularly rich in oil, nitrogenous matter, phosphoric acid and a considerable quantity of diastatic ferment. This nitrogenous matter contains little or no tenacious gluten. As already remarked, we have in a grain of wheat, materials for bone, hair and teeth-forming, flesh-forming and heat-producing. Very fine white flour although producing a larger number of loaves of bread, is not nearly so nutritious as the darker flour from the old stone mills, owing to the nitrogenous matter, the acids and salts having in the process of dressing been very largely extracted.

USES—Wheat is the most nutritive of the food-grains; it forms the staple food of the majority of the better classes of the people in Northern and Western India and of nearly two-thirds of the human race. Wheat is used for the preparation of bread and cakes. Wheaten bread is the "Staff of Life." Fermented bread is the best of these, aerated bread is better than baker's bread, white bread better than brown, stale bread 4 or 5 days old, better than new bread, and toasted bread better than untoasted—for the subject of chronic dyspepsia. The toast must be crisp, eaten, when yet slightly warm without butter, but with jam or vegetables, so that it may be

throughly-chewed. *Whole meal bread* is good for those who have costiveness but no dyspepsia; bread made of flour containing some bran is good, as the coarse particles cause an irritation of the bowels and drive down the foecal matter more easily than bread made of fine flour. *Soojee*, the coarser particles of flour are good for making porridge with, for those suffering from costiveness. *Wheat Coffee* is a good substitute for coffee. It is an ideal nourishing drink and food for all including children. It is prepared thus :—Take a handful of wheat of long variety, fry it in an earthen pot and powder it in a grinding stone. Put one tablespoon of the powder for two cups of water, boil it for a few minutes, stirring all the while, and add sufficient quantity of milk and sugar. This may be taken along with any solid food or independently according to the digestive power of the individual. *Medicinally* wheat $\frac{1}{8}$ seer kept in water overnight, beaten into a paste next morning, strained and mixed with 5 tolas of sugar is given in *Prameha* (extreme heat of body). Also fried wheat is given mixed with honey for lumbago or pain in joints. Wheat flour mixed with sugar and milk is given in epistaxis. The flour of wheat made into *conjee* is taken to check profuse menstruation; bread is used for making bread poultices; the crumb of bread *is* employed for the preparation of charcoal poultice; it is also used as a basis for pills containing creosote and similar medicaments. *Externally* wheaten flour is useful as a *dusting powder* over inflamed surfaces as in erysipelas, burns, scalds and various itching and burning eruptions. It is employed for making *yeast poultice*. A mixture of flour and water is an antidote in cases of poisoning by

salts of mercury, copper, zinc, silver and tin and by iodine. Whole wheat flour mixed with vinegar, boiled and applied outwardly removes freckles. The "*bran*" is used in *decoction* or *infusion* as an emollient bath in skin diseases such as psoriasis; and internally as demulcent. The *bran bread* is slightly laxative and may be used with advantage in certain dyspeptic conditions and, owing to its freedom from starch, in diabetes. *Bran cakes* and *bran biscuits* are far preferable to pastries forbidden. As it retains heat for a very long time, *bran poultices* and dry applications are frequently made use of in the treatment of severe local pains whether spasmodic or inflammatory, in acute inflammation of the chest or abdomen and in the premonitory symptoms of croup in children. The *oil* pressed from the germ of wheat is said to heal tetter and ringworm and also hollow ulcers.

978. Triticum Vulgare (*Sans.*—Mahgodhuma (large grained); Madhuli (small grained); Niksuki (beardless) are three varieties of wheat mentioned in the Bhavaprakasa. The first variety is said to come from the West and the second, indigenous to the middle region comprising the old north-west provinces and Delhi.

979. Triumfetta Rhomboidea of the genus Tiliaceae (*Sans*—Jhinjharita. *Hind.*—Chitke; Chiriyari. *Ben.*—Ben.Okra. *Tam.*—Aodaiotti. *Bom & Mah.*—Nichardi; Jhinjudi. *Kon.*—Tupkati) is found throughout tropical and sub-tropical India and Ceylon. It is a very common weed growing wild and freely on Matheran Hill. The fruit, flowers and leaves are used in medicine. The mucilaginous and astringent properties of the *leaves* and *fruits* of certain Triumfettas render them useful for

injections for inveterate cases of gonorrhoea—(Murray). The *bark* and *fresh leaves* are used for diarrhoea, also flowers rubbed with sugar and water are given in gonorrhoea to stop the burning caused by urine. The burr-like fruit is believed to promote parturition—(Dymock).

Trophis Aspera—See Streblus Asper.

980. **Turraea Villosa** of the genus Meliaceae (*Bom*—Kapur Bhendi) found in the Western Himalayas; Anamalay and Mahableshwar hills and in Guzarat at Dolca. Its *root* is used as an application to fistulas and is administered internally in black leprosy—(Dymock).

981. **Tussilago Farfara** of the genus compositae (*Punj*—Watpan) is found on the Western Himalayas from Kashmir to Kumaon. Its *roots* and *leaves* are smoked like tobacco as a remedy for asthma, obstinate colds and coughs. Expressed *juice* of the fresh leaves taken in some ounce-doses every day is said to heal scrofulous ulcers.

982. **Tylophora Asthmatica** (*Sans.*—Anthrapachaka. *Bom. and Mah.*—Kharaki; Rasana. *Duk.*—Pitakari. *Tam.*—Peyppalai. *Cing.*—Binnuga) is a plant common in sandy localities in Bengal and other parts of India. *Powder of the dried leaves* is one of the best indigenous substitutes for Ipecac. In dysentery and diarrhoea even in the earliest stages and whilst fever is present, it may be given in doses of 10 grains in an ounce of water, three times daily conjoined with a drachm of mucilage and a $\frac{1}{4}$ grain of opium to the dose if required. If the fever be of intermittent type or malarious origin it should be combined with quinine. In respiratory affections and the early stages of whooping cough it is administered in doses of 5 grains thrice daily or oftener either alone or

combined with ½ drachm of syrup of country liquorice in ½ ounce of water thrice daily. It is highly reputed as an alterative and as a purifier of blood, and is given in rheumatism. It is a bitter, aromatic and stimulant. It is given to increase lochia in parturient women. It is also used in syphilitic rheumatism. Locally it is soothing and applied to relieve gouty pains. This drug has been tried in the form of *decoction of the leaves* (1 in 10) and *infusion of the root-bark*, in cases of dysentery, asthma and bronchitis and found beneficial in those diseases—(Ind. Drugs Report, Madras). See also Asclepias Asthmatica.

983. **Typha Angustifolia**. (*Sans.*—Eraka. *Hind.*—Pater. *Mah.*—Motitrina; Ramabana. *Eng.*—Elephant grass. *Ben.*—Hogla) is a grassy plant growing in marshy land in Bengal and Assam. It is said to be "refrigerant, aphrodisiac and wind exciting, beneficial in strangury, calculus, burning of the skin and diseases of bile"—(N. N. Sen Gupta). The wooly soft inflorescence is used like cotton wool as a local dressing to wounds and ulcers. It acts in the same way as medicated cotton wool.

984. **Typhonium Trilobatum**; T. Orixenze of the genus Aroideae (*Ben.*—Ghit-kochu. *Tam.*—Karunaik-kizhangu. *Tel.*—Kanda-gadda. *Mal.*—China) is indigenous to Lower Bengal, Burma, Eastern and Western Peninsula, and Ceylon; it is common in damp places in moist low country. Its *roots* are exceedingly acrid and used in *poultices* and also applied externally to the bites of venomous snakes; at the same time it is internally given about the size of a field bean. It is a most powerful stimulant.

The acrid principle is very volatile and by the application of heat or by simple drying the root becomes innocuous or even wholesome as articles of diet—(Ph. Ind.) As an article of food it relaxes the bowels and thereby relieves haemorrhoids. The wild plant is used as a medicine for piles.

985. Uncaria Gambier or Nauclea Gambier is a shrub of the genus Rubiaceae, (*Eng.*—Gambier; Pale Catechu. *Hind.*—Kath. *Ben.*—Papri. *Bom.*—Chinai-Katha. *Mah.*—Kath. *Mal.*—Gambier) cultivated in Malacca, Penang and Singapore. Gambier is the product of the shrub extracted from the leaves and young shoots by boiling and subsequent evaporation, and imported in irregular, sometimes partly agglutinated cubes. It is closely allied to catechu of the B. P. It contains the active principle—Catechu-tannic acid 22 to 50 p. c., catechin 7 to 33 p. c., Quercetin, a yellow colouring principle, catechu-red, gambier-fluorescein, wax, oil etc. It is used in tanning, and also largely used as an ingredient in *pan-supari* (betel-leaf). Medicinally it is used as an astringent and as an *application* to syphilitic sores and aphthous ulcers in the mouth.

986. Unona Narum is a shrub belonging to Anonaceae (*Can.*—Unamini-gida. *Mal.*—Narumpanal. *Mah.* & *Kon.*—Gunamanijhad) growing in the forests of the Western Peninsula, Central Provinces, South India and Ceylon. The *roots* are fragrant and aromatic and the leaves when bruised smell like cinnamon, sweet-scented greenish *oil* is obtained from the roots by distillation. An unctuous secretion exudes from the anthers. The *leaves* are used in rheumatism and the *root* in

erysipelas, biliousness and fevers.

987. **Uraria Lagopoides** or Doodia Lagopoides or U. Picta belonging to Rubiaceae, (*Sans.*—Prasniparni; Atigupta. *Hind.*—Pitvan. *Ben.*—Chakulia. *Bom.*—Dowla. *Mah.*—Debra. *Tel.*—Kolku-ponna. *Guz.*—Ranaganja. *Can.*—Nabiyalbone) is a grassy plant found in tropical parts of Nepal and Bengal. This plant is an ingredient of the *Dasamula Kada* (Decoction), which is used in rheumatism, fever, bleeding piles etc. It is considered alterative, tonic and anticatarrhal, but is seldom used alone. It is said to be alleviative of the three faults (*vata*, *pitta* and *kuffa*). According to Sushruta it was given with milk to women in the seventh month of their pregnancy to produce abortion. The plant is said to be an antidote to *Phoorsa* snake (Echis Carinata).

988. **Urena Lobata**, & U. Sinuata are species of the genus Malvaceae (*Hind.*—Lotloti; Kunjia. *Ben.*—Bun-ochra. *Santal.*—Bhidi Janelet, Mota behedi Janelet. *Bom.* & *Kon.*—Tapkote. *Mah.*—Vanabhenda; Ran-tupkada; Wagdau Bhendi. *Cing.*—Valta Epala) met with over the hotter parts of India—waste open ground, and Ceylon. The *root* is used as an *external* application for lumbago and rheumatism.—See also Hibiscus Tiliaceus.

989. **Urena Repanda** or U. Speciosa (*Santal.*—Sihaur) is found in North-west India, Upper Gangetic plain and the western Peninsula. The *root* and *bark* are believed by the Santals to be a cure for hydrophobia—(Campbell).

990. **Urgina Indica**; U. Martiema is a plant of the genus Liliaceae (*Sans.*—Vanapalandu. *Eng.*—Indian

Squill. *Arab.*—Basalula-phare-hindi. *Pers.*—Piyaz-i-dasht-i-hindi. *Hind.* & *Ben.*—Jangli-piyaz. *Bom. Kon.* & *Mah.*—Kolkanda ; Jangli-kanda. *Duk.*—Kandra. *Guz.*—Bankando. *Tel.*—Adavi tellagada. *Tam.*—Nari-vengayam. *Mal.*—Kanthanga) growing in sandy places near the sea and also found in the Lower Himalayas. The drug consists chiefly of the bulbs whole and unsliced like onions in size. The bulb is divested of its membranous outer scales, cut into slices and dried, the central portion being rejected. The young tunicated *bulbs* only should be used, as they lose their medicinal properties as they get older. When roasted and crushed it is used to check the growth of inveterate corns on the soles of feet ; the sole of the foot with the corn is made to press forcibly on the crushed squill when it is hot as hot as can be borne. The *bulb* is rubbed to the soles of the feet to relieve burning. In small doses it acts like imported squill as an expectorant, stimulant, diuretic, deobstruent and emmenagogue. In large doses it is an emetic and cathartic. Mixed with *anjir*, anise, *Kali draksha* (Vitis Carnosa) and honey its *syrup* is of great value in acute bronchitis where the sputa are tenacious and scanty and in chronic bronchitis, associated with emphysema and in spasmodic croup. Physiologically the drug slows heart-beat and increases the flow of urine. It is excreted by the bronchial, genito—urinary and gastro-intestinal secretions. In excessive doses it is a narcotic acrid poison causing nausea, strangury and bloody urine, often suppression of urine, gastro-enteritis followed by convulsion and paralysis of heart and death. The drug is used in the form of

pill, *powder*, *tincture*, *oxymel*, *acetum*, *syrup* in various diseases *viz.*, cardiac and renal dropsy, ascites, also in chronic Bright's disease, asthma, rheumatism, calculous affections and paralytic affections, leprosy and skin diseases. A *powder* of it is locally applied to remove warts. The chemical constituents of squill are an inactive glucoside—scillian and toxic amorphous glucosides and bitter principles scilipicrin and scillitoxin, mucilage, sugar and ash (5 p. c.) containing crystals of calcium oxalate and citrate are also present. A "*syrup* was prepared from the expressed juice of the bulbs the strength being 1 in 2, and administered in cases of bronchial catarrh and chronic bronchitis in the out-patient Department of General Hospital, Madras, and was found in those affections"—(Ind. Drugs Report, Madras).

Urostigma Bengalensis—See Ficus Bengalensis.

991. **Urtica Dioica** (*Eng.*—the common stinging nettle) is a species of Labiatae genus. Though it is a native of Europe, a large number of its species are found in India. Though regarded as a troublesome weed it is medicinally useful. It contains formic acid, mucilage, salts, ammonia, carbonic acid and water. A *tincture* and *syrup* are made from nettles and recommended for nettle rash and other eruptive conditions. It is a domestic remedy for renal complaints and haemorrhages. It is astringent, diuretic and antiscorbutic, also powerful haemostatic. It is largely used for catarrh and leucorrhoea, bronchial haemorrhage, blood-splitting and uterine haemorrhage, where ergotine, tannic acid and the like are unsucessful. Dose of the syrup is from 2 to 4 drachms, of the tincture (1 in 8)

and of the *fluid extract,* the dose is from ½ to 2 drachms. The tincture diluted with an equal quantity of water and put on a cloth is useful for burns. The *young leaves* when steamed make a laxative vegetable. The *dried leaves powdered* and inhaled relieve asthma and bronchial troubles; eight grains should be burnt and inhaled at bed-time.

Uvaria Narum & U. Luvido (*Kon.*—Kalo Apkaro) —See Unona Narum.

Uvaria Odoratissima or Artabolrys Odoratissima (*Kon.*—Kalo champu)—See Unona Narum.

Valeriana Celtica & V. Jatamansi—See Nardostachys Jatamansi.

992. Valeriana Officinalis (B. P.) of the Valerianeae genus, (*Sans.*—Bala Hrivera. *Eng.*—True valerian. *Hind.*—Sugandha bala-chhara. *Pers.*—Sumbul-ul-tib; Sumbul-ul-asfar. *Duk*—Vilayeti jhatamanshi) is a species found in North Kashmir, North Asia, Sind, Burma, Ceylon etc. It is the drug of the British Pharmacopoea. The dried rhizome and roots contain a volatile oil, valerianic acid, formic, acetic and malic acids, chatinine, tannin, starch, sugar, resin, gum and extractive. For more particulars see B. P.

993. Valeriana Wallichii; V. Hardwickii; V. Leschenaultic; V. Brunoniana are plants of Valerianeae Order (*Sans.*—Tagara; Nandyavartha. *Eng.*—Indian Valerian. *Hind.*—Bala-tagra. *Punj.*—Mushkh-i-wali. *Ben.*-Tagar; Nahani. *Arab.*—Asarum. *Cash.*-Chhalgudi. *Mah*-Tagaraganthona, *Can.*—Nandi-battal) indigenous to the temperate Himalayas and found in Kashmir and Bhutan. The rhizomes or root stalks are collected in Afghanistan

and exported to the plains. The rhizome and rootlets contain a large proportion of volatile oil (1 p.c.) containing esters of volerianic acid. The volatile oil contains bornyl isovalerianate, formate, butyrate, and acetate, mixed with l-pinene, l-camphene, and terpineol. By ferment decomposition isovalerianic acid, an oily liquid with a powerful valerianic odour and acrid burning taste, is formed; two alkaloids, chatinine and valerianine, a glucoside and a resin have been recorded. The action and uses of Indian Valerian are the same as those of of Officinal Valerian. It acts as a stimulant and antispasmodic, and is indicated in nervous and hysterical symptoms.

Valkemeria Inerme—See Clerodendron Inerme.

Valkemeria Multiflora—See Clerodendron Phlomoides.

Vallaris Heyneis—See Echites Dichotoma.

994. Vanda Caerulea is a species of Orchids growing on the Banian trees throughout India, with bright blue flowers, which are used as a pectoral and the *juice of the leaves* is used in diarrhoea, dysentery and externally as application in skin diseases.

995. Vanda Roxburghii (*Sans* —Rasna; Vandaka; Gandha-nakuli. *Hind. Ben. Mah.* & *Guz.*—Rasna Nai. *Santal.*—Darebanki. *Tel.*—Kanapa chettu; Badanike; Neardanchettu) is an orchid growing on trees in Bengal, Behar, Guzerat, and Koncan to Travancore. *Rasna root* is said to be fragrant, bitter and useful in all nervous diseases, rheumatism and allied disorders. It enters into the composition of several medicated oils for external application in rheumatism and diseases of

the nervous system. It is also said to be a remedy for secondary syphilis.

996. **Vanda Spathulata** is a species found in Bengal growing on Terminalia Belerica. Its *powdered leaves* and the *flowers* are used like those of V. Roxburghii.

997. **Vangueria Spinosa.** is of the genus Rubiaceae (*Sans.*—Pinda; Pindiluka. *Bom.*—Alu. *Ben.*—Mayna. *Hind.*—Pundrika; Bangariki-lakri. *Mah.*—Chircholi; Madandriksh. *Tam.*—Peddamunga. *Tel*—Vedankike; Chegagadda) found throughout India. The *fruit* is refrigerant and chologogue and *decoction* of fruit (1 in 10) is used in biliary complaint with hepatic congestion; dose is 2 to 6 drs. The fruit is eaten when ripe cooked or uncooked or roasted. The fruit contains sugar, gum and a small quantity of tannic acid but no cyanogenetic glucoside or alkaloid was found.

998. **Vateria Indica;** V. Malabarica or Chloroxylon Dupada of the genus Dipterocarpeae (*Sans.*—Ajakarna; Sarjaka. *Eng.*—White Dammer tree; the Piney resin or Indian Copal tree. *Hind.* & *Duk.*—Safed damer. *Ben.*—Kundro. *Guz.* & *Mah.*—Ral. *Punj.* & *Cash.*—Sundras. *Tel.*—Telladu maramu. *Tam.*—Vellai-kunnrikam. *Can.*—Dhupadamara. *Mal.*—Vella-Kundurukkam. *Cing*—Hal-dumlua. *Malay.*—Guttah rukam puteh) is a large evergreen tree indigenous to South-Western India, Canara and Travancore. The seeds bruised and boiled yield solid fat 49.2 p. c., which resembles the solid fats of Garcinia and Bassia. It is greenish yellow, bleaches rapidly on exposure to light and has a peculiar balsamic odour. It contains oleic and other

fatty acids. It is known as Piney tallow or resin, which is emollient and stimulant and useful application in chronic rheumatism and other painful affections. A fine *resin*, the better qualities not unlike amber, exuding from incisions made in the trunk, exists in irregular masses varying in colour, fragrance and density. It is used like copal for making varnishes. It burns with a clear, steady light, giving off a pleasant smell, but very little smoke. It is used as an *incense*. Combined with wax and oil with the aid of gentle heat it forms a good basis for various *ointments* and *plasters*. White dammar 5, Kokum butter 8 and wax 8 parts melted together with a gentle heat, stirring briskly as it cools and spread on rag or lint, forms a good stimulant dressing for carbuncles and other ulcerations.

999. **Ventilago Madraspatana** of the genus Rhamneae (*Sans.*—Raktavalli. *Eng.*—Red creeper. *Hind.*—Pitti. *Ben.*—Raktapita. *Bom.*—Lokandi. *Guz.*—Ragatorohado. *Duk.*—Luri-chakka. *Tam.*—Surate cheka; Vempadon. *Tel.*—Petli-tige; Lurala-tige; Yerra-chairatali. *Can.*—Papplichakke. *Cing.*—Yaccaduvel. *Kon.*—Khandvel) is met with in Western Peninsula throughout the plains of India and forests of Burma and Ceylon. *Powdered root-bark* is carminative, stomachic, tonic and stimulant; useful in atonic dyspepsia, debility and fevers. The *oil* is used locally for itch and skin eruptions.

1000. **Verbascum Thapsus** belonging to Scrophulariaceae (*Eng.*—"Great Mullein". *Punj.*—Valrphul; Bhumkedhum. *Hind.*—Gidar-tamaku) is indigenous to temperate Himalayas from Kashmir to Bhutan. The *root* is given as a febrifuge. The *seeds* are supposed to be

narcotic and used to poison fish. The *herb* is employed for the treatment of asthma and other pulmonary complaints. The seeds are also aphrodisiac. The *leaves* warmed and rubbed with oil are applied to inflamed parts. A pint of cow's milk with a handful of the leaves and boiled down to half a pint, sweetened, strained and taken at bed time, allays cough and removes pain and irritability. *Flowers* are found to contain a yellow, volatile oil, a fatty acid, free malic and phosphoric acids, malate and phosphate of lime, acetate of potash, uncrystallizable sugar, gum, chlorophyl and a yellow resinous matter. The leaves chemically analysed are found to contain ·8 p. c. of crystalline wax, a trace of volatile oil, ·78 p. c. of resin soluble in ether, small quantity of tannin, a bitter principle, sugar, mucilages etc., 5·9 p. c. of moisture and 12·6 p. c. of ash. The drug was also found to contain mucilage, carbohydrate corresponding to dextrin, glucose, saccharose, moisture, ash and 32·7 p. c. of cellulose and lignin.

Verbesina Calendulacea—See Eclipta Alba or Wedelia Calendulacea.

1001. VERNONIA ANTHELMINTICA. or Ascaradia Indica or Conyza Ascaradia or Serratula Anthelmintica.

(*N. O.*—COMPOSITAE).

Sans.—Somaraja; Atavi jeeraka; Avalguja; Vakuchi, *Eng.*—Purple Fleabane. *Hind. & Ben.*—Kalouji. *Cash.*—Bakchi. *Guz.*—Kadvo-jiri. *Mah.*—Kale-jiri. *Tel.*—Adavi jilakara; Vishakantakalu. *Tam. & Mal.*—Kattukjiragam. *Can.*—Kadu-jirige. *Cing.*—Sanni-naegam. *Malay.*—Justan hutan.

Habitat.—This plant is common in waste places near villages throughout India.

Parts Used.—The dried seeds, leaves and root.

Constituents.—The seed contains resins, an alkaloid known as vernonine, an oil and ash 7 p. c., free from manganese.

Action.—The seeds are anthelmintic, stomachic, tonic, diuretic, antiperiodic, and alterative. The viscid green oil obtained from the seeds is diuretic and powerfully anthelmintic.

Uses.—The *seeds* are generally used in cases of round worms, which are expelled lifeless. The dose is about two to three drachms of the bruised seeds administered in *electuary* with 4 to 6 drachms of honey in two equal doses and followed by an aperient. *Infusion* of the powdered seeds (10 to 30 grains) is also a good and certain anthelmintic—(Dr. E. Ross). This drug was tried "in cases of round worms in doses of 20 to 60 grains; the result was completely satisfactory"—(Ind. Drugs Report, Madras). The seed is used in Malabar for flatulence and coughs. For white leprosy (leucoderma) and other chronic skin diseases as psoriasis, lepra etc., the seeds are a reputed remedy given alone or with other medicines such as black pepper or black sesamum, equal parts, all powdered and mixed. Dose is 1 drachm taken in the morning with tepid water. It should be taken after perspiration has been induced by exercise or exposure to the sun. The diet should consist of milk and rice. The remedy is recommended to be continued daily for one year for a complete cure to be effected. In leucoderma, a *decoction* of emblic myrobalans and catechu

is given with the addition of the *powdered seeds*. *Externally* the *seeds* are used in skin diseases in a variety of forms such as *paste*, *oil* etc. A *paste* of the seeds with lime juice is used locally to destroy pediculi. Chakradatta recommends an *emulsion* with cow's urine, made of 4 parts of Vernonia seeds and 1 part of Orpiment, as an application to the patches of white leprosy and leucoderma. The following paste is recommended to be applied over eruptions attended with itching:—Take of Vernonia seeds, seeds of Cassia sophora and Cassia Tora, turmeric and common sea-salt equal parts; rub them together into a *paste* with whey and fermented paddy-water. Radhiyasarasangraha gives the composition of a compound oil known as *Somaraji taila*, which is prepared with decoction of these seeds of Cassia Tora and 18 other substances reduced to a paste, and all boiled together with cow's urine and mustard oil. This oil is said to cure all sorts of skin diseases from vitiated blood, ringworm, prurigo etc. The *bitter leaves* and the *root* are employed in *external application* in rheumatism.

1002. Vernonia Cinerea or Conyza Cinerea or C. Purpurea (*Sans*—Sahadevi; Ardhaprasadana. *Eng.*—Ash-coloured Flea-bane. *Tam.*—Naichitte. *Can.*—Sahadevi. *Bom.*—Moti-sadori. *Guz.*—Sadori. *Tel.*—Gheritte-karnina. *Mal.*—Pirina; Puvankurutala. *Mah.* & *Kon.*—Sayadevi) is a species indigenous to Bengal, East and West Coasts of India. The *seeds* are alterative; the *leaves* and *plant* are diaphoretic. The *whole plant* with its small flowers is used medicinally in *decoction* or *infusion* (1 in 10) to promote perspiration in febrile affections; dose is ½ to 1 ounce. Combined with quinine it is beneficial

in malarial fevers. This is tried and found to be a useful combination"--(Ind. Drugs Report, Madras). The *seed* is employed as an alexipharmic and anthelmintic; also as alterative in leprosy and chronic skin diseases. The seed is used as a constituent of *masalas* for horses. The whole plant is a remedy for spasm of the bladder and strangury. A *poultice* of its leaves is a useful application in guinea-worms. The *flowers* are administered for blood-shot eyes (conjunctivitis). The root is given for dropsy.

Vetiveria Odorata--See Andropogon Muricata.

1003. Viburnum Foetidum is a plant belonging to Caprifoliaceae (*Sans.*--Shirparna Jaya. *Bom. Mah.* & *Kon.*—Narvela) met with in Western India, Khasia Mountains, Assam and Burma. Its constituents are a foetid volatile oil and a whitish alkaloid of a peculiar sharp taste, gum resin, and ash 12 p. c. The oil is the odorous principle in white greasy flakes. The foetor can be removed by distillation. In action it is acrid, bitter, uterine, astringent and sedative and also emmenagogue. The *juice of the leaves* in doses of ½ to 1 ounce; of fluid *extract*, in doses of ½ to 1 drachm; of *decoction* of the plant (1 in 10) ⅓ to 1 oz., is given in many uterine diseases:—menorrhagia, post-partum haemorrhage and in threatened abortion; also in dysmenorrhoea and after-pains. It is customary for Hindu women who have been confined to hang a branch over the room in which they lie as a protection against evil spirits and post-partum haemorrhage.

Vigna Catiang.—See Dolichos Catiang.

1004. Viola Cinerea & **V. Serpens** are plants of Violaceae order (*Hind. Sind.* & *Punj.*—Banafsha, *Kumaon.*--Thungtu) indigenous to temperate Himalayas,

Khasia hills and Niligiri mountains. The *flowers* of both these plants are used similarly like those of V. Odorata which see. In the Punjab a medicinal *oil* is prepared from the flowers of Viola serpens and is called *Raughan-i-banafsha.*

1005. Viola Odorata is a glabrate or pubescent herb closely allied to the above and several others of the same genus (*Eng.*—Wild violet. *Hind. Pers. Bom.* etc.—Banafsa; (the flowers) Guli-Banafsa. *Ben.*—Benosa. *Tam.*—Vayilethe) found in Kashmir and the temperate western Himalaya above 5000 feet. The violet flowers and root contain an emetic principle named violine believed to resemble emetine—the alkaloid of ipecacuanha in some of its characters. It forms salts by its union with acids; it is soluble in alcohol and hardly so in water. The flowers also contain in addition to traces of a volatile oil, several peculiar colouring matters and viola-quercitrin a yellow principle and sugar. The *flowers* are astringent, demulcent, diaphoretic, diuretic and mildly laxative; they are used in bilious affections, prolapse of the rectum and uterus and in restraining suppuration. They are also useful in cough, kidney diseases and liver affections. In pulmonary affections the drugs act as a diaphoretic and a nauseating emetic. In large doses they are emetic. The usual form of preparation is *syrup* made from the petals of which 1 to 2 drachms may be given to infants for coughs and tightness of the chest. Mixed with almond oil and syrup of senna it makes an excellent demulcent and aperient medicine suitable to children. The *root* is emetic in doses of from one drachm of the powder and upwards. It is frequently used to adultrate Ipecac.

1006. Viscum Alba; Viscum Sp. of Loranthaceæ Order (*Arab.*—Kishmish-i-kawaliyan. *Eng.*—Mistletœ. *Hind.*—Banda; Bhangra. *Ind. Bazar.*—Kismish-kawal; *Afg.*—Turapauli. *Punj.*—Bambaj; Kahbang) is growing in temperate Himalayas. The berries contain *Viscin* resembling vegetable wax, very elastic, of the consistence of honey and like caoutchouc capable of being drawn into long threads. *Decoction of berries* (1 in 10) or doses of ½ to 2 ounces or *tincture* (1 in 10) in doses of ½ to 2 fluid drachms, is used as tonic, antispasmodic, narcotic and oxytoxic; also emetic and purgative. Given to reduce splenic and hepatic enlargements to disperse swellings and in menorrhagia and hæmorrhages. Like digitalis it may be given in palpitation of the heart; as antispasmodic, in hysteria and epilepsy. Locally it is applied to mature abscesses.

1007. Vitex Agnus Castus of Verbenaceae Order (*Pers.*—Panjangusht. *Arab.*—Athlac. *Mah.*—Ranuka bija; Shambhaluka bija) is a plant of North-west India. The *berries* are used medicinally. They contain a bitter principle called *Castine* a violet acrid substance, a free acid and fat oil. *Decoction* (1 in 10) of the berries is used as stimulant, diuretic and alterative; given in enlargement of the liver and spleen and in dropsy. They are given with *pipali* in hiccough, in the form of powder.

1008. Vitex Latifolia is a tree found in Bengal and the East Indies where its *leaves* are used for venomous bites and the *bark* and the *root* in diarrhoea and dysentery—(Chakravarthy).

1009. VITEX NEGUNDO; V. Paniculata.

(*N. O.*—VERBENACEAE.)

Sans.—Sephalika; Nirgundi; Svetasurasa. *Eng.*—Five leaved Chaste tree. *Fr.*—Gattilier incise. *Hind.*—Sambhalu. *Ben.*—Nisinda. *Bom.*—Katri. *Mah.*—Nirgunda. *Guz.*—Nagoda; Shamalic. *Tel.*—Sindhuvaruma. *Tam.*—Chinduvaram. *Can.*—Bile-nekki. *Mal.*—Indrani. *Burm.*—Kiyonbhanbin.

Habitat.—Bengal and Southern India and Burma.

Parts Used.—The root, fruit, flowers and leaves.

Constituents.—The leaves contain a colorless essential oil of the odour of the drug and a resin; the fruits contain an acid resin, an astringent organic acid, malic acid, traces of an alkaloid and a colouring matter.

Action.—Leaves are externally antiparasitic and powerfully discutient; internally alterative, aromatic, bitter and vermifuge anodyne. The *root* is considered as tonic, febrifuge and expectorant, also diuretic. The fruit is nervine, cephalic and emmenagogue. The dried fruit acts as a vermifuge. The flowers are cool and astringent.

Uses.—The *leaves* are placed between the leaves of books and folds of silk and woollen clothes to preserve them from insects. Medicinally they are very efficacious in dispelling inflammatory swellings of the joints from acute rheumatism and of the testes from suppressed gonorrhoea or gonorrhoeal epididymitis and orchitis; also over sprained limbs, contusions, leech bites etc; the fresh leaves are put into an earthen pot, heated over a fire and applied as hot as can be borne without pain; or the leaves bruised are

applied as *poultice* to the affected part. A *pillow* stuffed with the leaves is placed under the head for relief of catarrh and headache. *Leaves bruised* are applied to the temples for headache. The *dried leaves* when smoked are also said to relieve catarrh and headache. The juice of the leaves is said to remove foetid discharges and worms from ulcers. Leaves are applied as *plaster* to enlarged spleen. The *juice* is used for soaking various metallic powders before making the latter into pills. An *oil* prepared with the juice is applied to sinuses and scrofulous sores. The oil may be used also as a *bathing oil* for rubbing on the head in glandular (tubercular) swellings of the neck. This method was tried in three such cases; in one case the swelling "went down after the oil was used for a month" (Ind. Drugs Report, Madras). The oil is found to effect marvellous cures of sloughing wounds and ulcers. Kaviraj Jogendranath Sen, M. A., reports a marvellous cure with *Nirgundi* oil of an old and deep gangrenous wound in the left arm of a patient, given up by allopathic Doctors after three months of medical treatment, as hopeless without the surgical method of amputation of the arm. The oil prepared with the juice of *Nirgundi* leaves cured it within three weeks--(D. P. Sanyal--Jour. of Ayurveda, Aug. 1924). A *compound oil* prepared with the juice of V. Negundo and eleven other substances in different proportions is said to act as specific for syphilis, venereal diseases and other syphilitic skin diseases. A *decoction of the leaves* with long pepper is given in catarrhal fever with heaviness of head and dulness of hearing--(Bhavaprakash). Roxburgh mentions the use of a decoction of the leaves as a warm bath in the puerperal

state of women who suffer much from after-pains. The *leaves* are given with garlic, rice and *gul* as a remedy for rheumatism. In the Concan the juice of the leaves with that of Eclipta Alba and Ocimum Sanctum is extracted and *Ajwan* seeds are bruised and steeped in it, and given in doses of half a tola for rheumatism. The *juice* in ½ tola doses with ghee and black pepper is also given and in splenic enlargement two tolas of the juice with two tolas of cow's urine are given every morning--(Dymock). A *tincture of the root-bark* in 1 to 2 drachm doses is recommended in cases of irritable bladder and of rheumatism. The *powdered root* is prescribed for piles as a demulcent also for dysentery. The root is used in a great variety of diseases :--dyspepsia, colic, rheumatism, worms, boils and leprosy. The *fruit* is prescribed in *powder*, *electuary* and *decoction*. The *flowers* are used in diarrhoea, cholera, fever and diseases of the liver and are also recommended as a cardiac tonic. The *seeds* form a cooling medicine for cutaneous diseases and leprosy. The *flowers* and *stalks* reduced to *powder* are administered in cases of discharge of blood from the stomach and bowels. In Mysore, febrile, catarrhal and rheumatic affections are treated by means of a vapour bath prepared with this plant.

1010. **Vitex Pedicularis** found in the provinces of Bengal, Behar and Orissa, is recommended by Vaughan (Br. M. Jour. Febry. 1921) as a substitute for quinine. It is said to cure malaria even after quinine has failed. A short time after its administration the patent's blood is found to be entirely free from malaria germs—(Kosmos, Stuttgart.) It has no bitter taste. The *tea* or *infusion*

of leaves or *bark* (1 in 40) is used by the aboriginal tribes of Ranchi, Behar and Orissa. It is said to be non-taxic, non-depressant and a safe drug. It is a specific for malaria and *Kala-azar* and haemoglobinuric fever"—Medical Annual 1922.

1011. **Vitex Trifolia** (*Sans.*—Jalanirgundi; Sindhuka; Surasa. *Ben.* & *Duk.*—Paniki Shumbala. *Eng.*—Indian wild pepper. *Hind.*—Nichinda. *Tam.*—Shirunach-chi. *Tel.*—Niru-vavilli. *Mal.*—Nirnoschi; Lagondi. *Pers.*—Panj-angushte-abi. *Can.*—Nira-lakki-gida. *Cing.*—Valuru. *Burm.*—Kujubhanbin) is a three-leaved tree found in Coromandel, Concan and the Deccan. Its medicinal properties are similar to those of V. Negunda. *Infusion of leaves* in ½ to 1 ounce doses is used as alterative, diuretic, anodyne and demulcent. It is also used as dry fomentation in sprains, contusions and rheumatism; infusion is given in intermittent fevers with scanty urine, rheumatism, enlargement of the spleen etc. *Fruit* is nervine, cephalic, and emmenagogue, employed in amenorrhoea. *Leaves* are applied to rheumatic pains, sprains etc. The *root* is an anodyne application. The *powdered leaves* are used as febrifuge.

1012. **Vitis Adanata.** V. Setosa of the genus Ampelideae (*Bom.*—Kole-zan. *Santal.*—Bob-lar-nari. *Paharia.*—Panilari. *Tel.*—Gudametige; Kokkitaya-ralu. *Mah.*—Nadena. *Kon.*—Mhasvel) is met with in hotter parts of India from Garhwal to Assam, Sylhet, Bengal, western Peninsula and Ceylon. The *dried tubers* are used as an alterative and diuretic in the form of decoction to purify the blood and to render the secretions healthy—(Dymock). The *root* powdered and heated is applied to cuts and fractures by the Santals.

1013. Vitis Araneosus is another species (*Bom.*—Bender-wel; Gherwel; (root):—*Bom.*--Chamarmusli. *Thana* Dt.--Bendri) indigenous to west Coast, western Ghats and Pulney Mts. The *vine* is often given to horses when it first springs up; it is said to be very beneficial once a year. The *young shoots* and *leaves* are given to horses as a cooling medicine. The tuberous starchy roots, sliced and dried are astringent in effect.

1014. Vitis Indica (*Eng.*—Indian wild vine. *Hind. & Duk.*—Panjeri; Jangli-angur. *Ben.*—Amdhiaka; Amulka. *Can.*—Sambar-balli. *Mal.*—Chemparavalli. *Mah.*—Randraksh; Kolejan. *Kon.*—Savsambar. *Tel.*—Sambera) is a species of the Malabar Coast and Travancore. Formerly the *juice of the root* with the kernel of the cocoanut was employed as a depurative and aperient. It is now given with the addition of sugar to produce an aperient action. It is also used as an alterative in decoction, like V. Adanata, in doses of ½ to 1 ounce. The *root-juice* mixed with oil is an application in eye-diseases; combined with cocoanut milk it is applied to carbuncles and other malignant ulcers.

1015. Vitis Latifolia. (*Ben.*—Panibel; Musal. *Kon.*—Katulam. *Guz.*—Janglidrakh. *Mah.*—Golinda) is a species found in North-west India, East and West coasts and southwards. The *juice* expressed from the tender leaves is used in odontalgia, as a detergent in indolent ulcers, and internally as an alterative. The roots are used for their astringent action.

1016. Vitis Pedata (*Sans.*—Godhapadi. *Ben.*—Goalilata. *Mah.*—Ghorpadvel. *Tel.*—Pulimada; Kamapatige. *Kon.*—Sarbarivel) is usually found in Bengal,

Assam, West Coast and Ceylon. The *plant* is "acrid, refrigerant, costive and beneficial in hysteria, burning of the skin and diarrhoea"—(N. N. Sen Gupta). *Leaves* are astringent. They are tied over ulcers to cure them. A *decoction* of the leaves is used to check uterine and other fluxes.

1017. **Vitis Quadrangularis** or Cissus quadrangularis or Lycopodium imbricatum or Heliotropium indicum (*Sans.*—Vajravalli; Asthisanhari. *Hind.*—Harsankari. *Urdu. Hind. Bom. Guz.*—Hadsankal; Harjora. *Tam.*—Pirandal. *Tel.*—Nullerotigen. *Mal.*—Isgangalam parenda. *Cing.*—Hiressa) is a plant found in the hotter parts of India. The *powdered root* is said to be a specific for the fractures of the bones, with the same effects as plasters externally. Dose of the powder is 30 to 40 grains. The *leaves* and *young shoots* when dried are powdered and given in certain bowel complaints connected with indigestion. They are also considered as powerful alteratives—(Ainslie). The *juice of the stem* is dropped into the ear in otorrhoea and into the nose in epistaxis. It has also a reputation in scurvy and in irregular menstruation—(Dymock). The *stem* beaten into a *paste* is given in asthma—(Balfour). A preserve of the stem prepared by boiling it in lime-water is a useful stomachic—(Moideen Sheriff).

1018. **Vitis Setosa** or Cissus Setosa or C. Cordata (*Tel.*—Baree bach-chali; Pulla bach-chali. *Hind.*—Harwal. *Duk.*—Yek-kisum-ka-bachla. *Mah.*—Khaj-goli-chavel. *Tam.*—Puli perandai; Puli-naravi) is a plant of Western Peninsula, from N. Circars and Mysore southwards. It is exceedingly acrid. The *leaves* are

sometimes externally applied as a domestic remedy to promote suppuration and assist in the extraction of guinea-worm—(Dymock). It is a useful local stimulant in the form of a *poultice*.

1019. Vitis Trifolia or V. Carnosa (*Sans.*—Amlaparni. *Hind.*—Amal-bel; Gidad-drak; Kassar. *Ben.*—Amal-lata; Sone-kesur. *Assam.*—Maimati. *Punj.*—Karik; Drikri. *Mah.*—Ambutvel. *Guz.*—Khat-khatumbo; Tamanya. *Tel.*—Kadep-tige; Mandula-maritige. *Cing.*—Walratdugalabu) is found in the hotter parts of India. A *poultice of the leaves* is employed in the treatment of yoke-sores on the necks of bullocks—(Elliot). According to Irvine the *seeds* and also *leaves* are used as an *embrocation*. Stewart remarks that the *root* ground with black-pepper is applied to boils. The root is used as an astringent medicine.

1020. VITIS VINIFERA.

(*N. O.*—AMPELIDEAE.)

Sans.—Dakha; Mridirka; Draksha. *Fr.*—Vigne Cultive. *Ger.*—Edleweinrebe. *Eng.*—Grapewine. *Tel. Tam. Can. Mah.* & *Kon.*—Draksha. *Hind.* & *Duk.*—Angur. *Pers.*—Kishmish. *Ben.*—Drakhya. *Guz.*—Mudraka. (Dried fruits):—*Eng.*—Raisins. *Ger.*—Rosinen. *Hind.*—Kishmish.

Habitat:—Grapes are largely cultivated in North-Western India, in the Punjab, Kashmir, Baluchistan and Afghanistan.

Parts Used:—The fruits, ripe, unripe and the partly dried ones (raisins); leaves.

Constituents.—The fruits contain grape sugar (glucose), gum, tannin, tartaric, citric, racemic and malic

acids, chlorides of potassium and sodium, sulphate of potash, tartrate of lime, magnesia, alum, iron, some albumin, ozotised matters and acid tartrate of potassium. Tartaric acid is the characteristic acid of the grapes. Raisins contain calcium, magnesium, potassium phosphorus and iron in an assimilable form; besides gum and sugar. The seeds contain a dense fixed oil or fat and tannic acid 5 p. c. The skins contain tannin.

Action.--Grapes are demulcent, laxative, refrigerant, diuretic and cooling. Raisins (dried grapes) are laxative demulcent and expectorant; also considered as attenuant. suppurative, nutritious and blood-purifier. The juice of the unripe grapes is astringent. The leaves are astringent.

Uses.—Grapes have been highly esteemed in India from a very remote period; they are recommended in certain forms of anæmia and wasting diseases. The patient is sent to a grape-growing country and ordered to eat one grape every five minutes for so many hours in the day. Grapes are also useful in some cases of bilious dyspepsia, hæmorrhages, dysuria, ardour urinæ and strangury. Grapes are said to be beneficial in chronic bronchitis, heart-diseases, Bright's disease and gout. Strained *grape-juice* in teaspoonful doses night and morning is given to children for constipation during teething and also to prevent convulsions due to constipation. Grape juice was formerly used in Europe in epilepsy. Grape juice is also good for thrush in children. It is also invaluable in severe colds and fevers. The *juice of sour grapes* is useful for bruises and sprains. The ripe fruits partly dried in the sun and called ***raisins*** are useful in thirst

attendant on fevers, in coughs, catarrh, jaundice and consumption, the stones or the seeds contained within being rejected. For acid dyspepsia Chakradatta advises raisins, sugar, honey, and powdered chebulic myrobalans in equal parts to be taken after washing out the stomach with vomiting. As demulcent and expectorant a *linctus* is recommended by Sharangadhara. It is made thus.—Take of raisins, emblic myrobalans, dates, long pepper and black pepper, equal parts, rub them together with honey and ghee. An invigorating and nourishing liquor known as *Draksharista* is also recommended by the same; it is prepared as follows:—Take of raisins 6¼ seers and water 128 seers, boil them together till reduced to one-fourth and strain. To the strained decoction add 25 seers of treacle and 8 tolas each of the following substances in fine powder:—*viz.*, cinnamon, cardamoms, *tejpatra* flowers of Mesua ferrea, fruit of Aglaia Roxburghiana, black pepper, long pepper and *baberang* seeds, and set aside for fermentation. This liquor is used in consumption, cough, difficult breathing and hoarseness. Fermented juice of grapes, with the flowers of Woodfordia floribunda and sugar popularly known as *Drakshasava* taken in doses of ½ to 2 tolas twice a day after food is very useful as stimulant, tonic, diuretic and diaphoretic in anorexia, indigestion and dyspepsia. It also "acted as a good appetiser and tonic in a young woman who was weak and and anaemic"—(Ind. Drugs Report, Madras). For jaundice Ilaj-ul-Gurba gives the composition of a *syrup* which consists of *Burda sunda* and Raisins, each 2 tolas, Cichorium intybus, Berberis aristata fruit, and *Khiaren* seeds, each 1 tola, *Nimak Lahori*

and Cardamoms, each 6 *mashas*, sugar 4 *chataks* and water sufficient quantity. Dose is 1 to 2 tolas. "Chew raisins, and be fit" is the advice that Dr. Josiah Oldfield offers to sufferers from rheumatism. A *paste* made of grapes or raisins, dates, pepper, *vavadinga*, long pepper and honey in equal parts is used in doses of ½ drachm in coughs. Wine is made from grapes in Kashmir by fermentation. Grapes are the source of Sherry, a Spanish wine, also alcohol and vinegar. The ashes of the wood are recommended as a preventive of stone in the bladder, cold swellings of the testes and piles. The *juice of the unripe grapes* is used in the affections of the throat in Italy. The *leaves* are sometimes used in diarrhoea. The bland fixed *oil* of the seeds or the *seeds in powder* have proved efficacious in many cases of chronic diarrhoea.

Volkameria Infortunata—See Clerodendron Infortunata.

1021. Volutarella Divaricata or Cardaus. Ramosus of the genus Compositae (*Bom.*—Badaward *Hind.*—Sakayi) is a plant found in Mysore and the Deccan," ascending to 3000 feet in the N. W. Himalaya. The plant is said to have tonic, aperient and deobstruent properties. It is said to drive away noxious reptiles when kept in the house—(Dymock). It is slightly mucilaginous and is used in coughs—(S. Arjun). It is used as a febrifuge and is often prescribed in fevers and general debility—(R. N. Khory).

1022. Wagatea Spicata is a Leguminous plant (*Hind.*—Wagati; Wakeri; Kuldgajga. *Can.*—Hooliganji) indigenous to the Western Presidency. The

pods (tere-pods) contain a large proportion of tannic acid. *Roots* are used in cases of pneumonia. *Bark* is used as an application for skin diseases.

1023. Wedelia Calendulacea of the genus Compositae (*Sans.*—Pitabhringi. *Ben.*—Bangra; Kesaraja. *Hind.*—Bhanra. *Bom.*—Pivala bhangra. *Mah.*—Pivalamaka) is met with in wet places of Assam, Sylhet and the Eastern and Western Peninsula. For further particulars see Eclipta Alba etc.

1024. Withania Coagulans is a small shrub of the genus Solanaceae (*Sans. Mah. Kon.* & *Ben.*—Asvagandha. *Eng.*-Vegetable Rennet. *Pers.*-Arusaka-pas-i-parad; Paner-bad. *Arab.*—Habbula Kakanage. *Hind.*—Akri; Punir. *Bom.*—Kakanaj. *Tel.*—Panneru-gadda. *Tam.*—Amukkira. *Can.*—Amakiregadde. *Mal.*—Amukiram) common in the Punjab, Sindh, Afghanistan and Baluchistan. The round capsular *fruit* is used in the fresh state as an emetic and when dried it is used as a stomachic; in small doses it is a remedy in dyspepsia and flatulent colic. It has the peculiar property of coagulating or curdling milk; a small portion is rubbed with a little water or milk and is added to the milk to be coagulated. The *dried capsules* also retain the coagulating property in an equal degree. A tablespoonful of the *decoction* (1 in 40) is enough to coagulate one gallon of warm milk and gives an excellent curd in about half an hour. The active principle named "*withanin*" residing in the numerous small seeds contained within the capsules is a ferment closely allied to the animal rennet. It is destroyed by boiling and is precipitated by alcohol, which latter does not, however, affect its coagulating property. It can be extracted from

the seeds either by glycerine or by a moderately strong solution of common salt; extracts prepared by either means have strong coagulating powers even in small amounts.

1025. WITHANIA SOMNIFERA.

(*N. O.*—SOLANACEÆ).

Sans. Ben. & *Tel.*—Asvagandha. *Eng.*—Winter Cherry *Hind.*—Asgandh. *Guz.*—Asundha ; Asana. *Goa.*—Fatarfoda. *Bom.* & *Mah.*-Asagandha. *Tam.*-Achuvagandi ; *Tel.*-Peneroo. *Can.*—Sogade-beru ; Hirimaddina-gadde. *Mal.*—Pevette.

Habitat.—This shrub is common in Bombay and Western India, occasionally met with in Bengal. The root smells like a horse and hence the name.

Parts Used.—The root and leaves.

Constituents.—The plant growing in Southern Europe is found to contain a bitter alkaloid "Somniferin" having hypnotic property; also resin, fat and coloring matters.

Action.—Tonic, alterative, aphrodisiac and nervine sedative. The seeds possess the property of coagulating milk like those of W. Coagulans, but they also contain poisonous properties. The leaves and root have narcotic properties. The root is also diuretic and deobstruent, tonic, alterative and aphrodisiac.

Uses.—The *root* and bitter *leaves* are used as a hypnotic in alcoholism and emphysematous dyspnoea. The leaves are used as an anthelmintic and as an application to carbuncles. The *fruits* or *seeds* are used as diuretic, and to coagulate milk. The *root* is used as an application in obstinate ulcers and rheumatic swellings. The root is

used in doses of about 30 grains in consumption, emaciation of children, debility from old age, rheumatism, in all cases of general debility, nervous exhaustion, brain-fag, loss of memory, loss of muscular energy and spermatorrhoea. It is said to infuse fresh energy and vigour in a system worn out owing to any constitutional disease like syphilis, rheumatic fever etc., or from over-work and thus prevents premature decay. *Powder* of the root mixed with ghee and honey in equal parts is recommended for impotence or seminal debility; it is to be taken in the evening, followed by milk. As nutrient and health restorative to the pregnant and old people a *decoction* of the root is recommended; or its powder with milk may be taken. The decoction boiled down with milk and with ghee added to the mixture is recommended for curing the sterility of women. It is to be taken for a few days, soon after the menstrual period. For bloody discharge, leucorrhoea etc., *Asvagandha powder* 45 grains and sugarcandy 1 tola is given in cow's milk, morning and evening till cure is obtained. For spermatorrhoea, loss of strength etc., a powder consisting of *Asvagandha*, sugar ghee, honey and long pepper is to be given daily, with milk and rice diet. For lumbago, pains in the loins or small of the back, powder of *Asvagandha* and sugarcandy, in ghee is recommended. For scrofulous and other glandular swellings *fresh green root* of Asvagandha reduced to *paste* with cow's urine or with water heated is applied to the parts affected. In consumption a *decoction of Asvagandha root* and long pepper is given with the addition of clarified butter and honey. For improving the nutrition of weakly children, the root reduced to a

paste is given with milk and clarified butter for a fort-night (Chakradatta.) The same recommends also a preparation called *Ashvaghndha Ghrita* which is made as follows:—Take of the decoction of *Ashvagandha* root 1 part, milk 10 parts, clarified butter 1 part, boil them together and prepare a *ghrita*. It is given to promote the nutrition and strength of children. An oil popularly known as *Narayana Taila* is recommend-ed for internal administration in doses of 3 drops daily increased by 1 drop to 10 drops in consumption, emaciation of children and rheumatism and as an *enema* in dysentery and anal fistulæ; the oil is made thus:—Take of *Ashvagandha*, root of Sida cordifolia, Aegle marmelos, Cissampelos pareira, Solanum jacquini, Pedalium murex, Melia azadirachta, root of Calosanthes indica, Boerhavia diffusa, Clerodendron phlomoides, each 2 parts-Make a decoction. To this add sesamum oil 40 parts, and a paste of Daemia extensa (*uterance*) 10 parts, Acacia catechu, Cardamoms, Nardostachys jatamansi, Acorus calamus, Clematis triloba, Pterocarpus santalinus (red) rock salt, Withania somnifera, Tylophora asthmatica, Foeniculum vulgare, Pinus deodara, Desmodium gangeti-cum, Uraria picta, and Valeriana hardwickii each 2 parts. Boil the whole for one hour. Used as drops into the nose in deafness, and as an inunction over the body in hemiple-gia, tetanus, rheumatism, and lumbago. As a galactagogue the *decoction* of the roots of *Ashvagandha*, Batatas pani-culata and Liquorice, is remomended to be given in cow's milk. In rheumatism a *ghrita* prepared with a decoction and paste of the root is used internally and an *oil* prepared with a decoction of the root and a number of aromati

substances in the form of a paste is used externally. For skin diseases *Ashvagandha* powder well mixed in oil is applied to the skin. For improving sight or vision a mixture of the *Ashvagandha powder*, liquorice powder and the juice of emblic myrobalan is recommended to be taken. About half a drachm of *Ashoagandha* root taken with milk or clarified butter is said to act as an aphrodisiac and restorative to old men—(Sharangadhara). A mixture of the powders of *Ashvagandha* and Ipomoea roots in equal parts, placed in a vessel smeared with ghee, is given in doses of 1 tola in cow's raw milk (as soon as drawn) as an aphrodisiac and invigorator. *A compound decoction of Ashvagandha* 3, Ipomoea root 2, long pepper 4 and honey 5 parts is also recommended in doses of ½ to 1 ounce in cow's milk, for consumption, seminal debility, and to help the nutrition of weakly children.

1026. Woodfordia Floribunda is a large shrub belonging to Lythraceae (*Sans.*—Dhataki ; Dhauri ; Agnijvala. *Hind.*—Dhauta. *Ben.*—Dhai-phul. *Bom.*—Dhayatis. *Nepal*—Daheri. *Mah.*—Pulsathi. *Guz.*—Dhavadina. *Tel.*—Seringi ; Errapurvu. *Can.* & *Mal.*—Tamrapusphi. *Tam.*—Dhathari puspam) common in many parts of India. The bright red *flowers* contain tannin 20 p. c. In action they are stimulant and astringent ; The dried ones are astringent and tonic. The flowers furnish a red dye and the *leaves* are used for dying leather and their *infusion* is used as tea. They are largely used as a tanning material. The *flowers* of this plant are added to the prepared liquids in making most of the *Aristas* and *Asavas* for causing alcoholic fermentation, before the pots containing the

materials are sealed and put away. Medicinally the *flowers* are used as *powder* in doses of 2 drachms in curdled milk in cases of dysentery and other bowel complaints and internal haemorrhages; in leucorrhoea and menorrhagia the powder is given with honey. A podwer consisting of these flowers *Mocharas* and *Ajamoda* all in equal parts and in powder is recommended in doses of 2 drachms in curdled milk and honey in menorrhagia and dysentery. *Externally* the powdered flower is sprinkled over foul ulcers and wounds for diminishing their discharge and promoting granulations, as recommended by Sharangadhara. For the same purposes a *decoction* of the flowers is also used as a *lotion*. In the dysentery of children the following combination is given in the form of powder or decoction with the addition of honey:—Take of the flowers of Woodfordia floribunda, *bel* fruits, bark of Symplocos racemosa, root of Pavonia odorata and the fruits of Pothos officinalis in equal parts, 2 tolas in all and prepare a decoction in the usual way. A *Confection of Dhataki* is used in doses of 1 to 2 drachms as stimulant and astringent, given in dysentery and to check haemorrhages and chronic discharges such as menorrhagia and leucorrhoea. This was tried and is said to have given "satisfactory result in dysentery"—(Ind. Drugs Report, Madras). It consists of, in addition to the above ingredients, honey and Andropogon muricatus. The *dried flowers* are useful in disorders of the mucous membranes, haemorrhoids and derangements of the liver; they are also considered a safe stimulant in pregnancy. In the Concan the *leaves* are used in bilious sickness; the *juice of leaves* is

applied to the crown of the head, while the patient is made to hold a mouthful of sesamum oil. This is said to cause the oil in his mouth to become yellow from absorption of bile. Fresh oil is then given repeatedly until it ceases to turn yellow.

Wrightia Antidysenterica.—See Holarrhena Antidysenterica.

1027. Wrightia Tinctoria or W. Rothii of the genus Apocynaceæ (*Sans.*—Hyamaraka. *Eng.*—Sweet Indrajao. *Ben.*—Indrajav. *Bom.*—Kalakuda. *Hind. Mah. Guz.*—Mitha Indrajava; Gode Indrajava. *Mal.*—Kota-kappala. *Tam.*—Vetpala virai. *Tel.*—Ankudu kodisha) is found in Central India, Western Peninsula, Coromandal, Coimbatore and Godavery districts. *Decoction of leaves and bark* (1 in 10) in doses of ½ to 2 ozs. is used as stomachic, tonic and febrifuge, in combination with other vegetable bitters; given in bowel complaints and during convalescence from fevers and other acute diseases. The seeds are tonic, and are given in seminal weakness. Leaves when chewed relieve toothache. The bark is confounded with that of Holarrhena antidysenterica.

Wrightia Tomentosa—See Nerium Tomentosa.

1028. Xanthium Strumarium or X. Indicum is a plant of Compositae Order (*Sans.*—Aristha; Shankine. *Hind.*—Shankhahuli; Chhota-gokhru. *Ben.*—Bun-okra. *Bom.*—Dhupa. *Mah.*—Shankeshwar. *Tam.*—Marhe-matta. *Tel.*—Veritelnep. *Sind. & Punj.*—Kullan) found in the hotter parts of India and Ceylon, (usually near houses) the western Himalayas up to the height of 5000 ft. The fruit contains fat 38·6 p. c.,

ash 5·2 p. c., albuminoids 36·6 p. c., sugar, resin, organic acids and a glucoside named 'Xanthostrumarin' related to datiscin. In action the *whole plant* is diaphoretic, diuretic and sialagogue. Other actions resemble those of Jaborandi. *Decoction* (1 in 10) of the plant in doses of ½ to 1 ounce is given in urinary and renal complaints, in gleet, leucorrhoea, menorrhagia and long standing cases of malarial fevers. Dose of the *dried leaves in powder* is 10 grains. The *root* is a bitter tonic useful in cancer and struma. The prickly fruit is considered cooling and demulcent and is given in small pox.

Xanthochymus Pictorious--See Garcinia Xanthochymus.

Xemenia Aegyptica--See Balanitis Roxburghii.

1029. **Yeast.** (*Eng.*--Yeast. *Pers.* & *Hind.*--Khamir) is the name applied to any of the various species of fungi of the genus Saccharomyces, (see Torula Saccharomyces). It is best known as a ferment thriving in saccharine solutions, breaking up the sugar molecule into carbon dioxide and alcohol. In domestic economy, it is used in leavening bread, the porosity of the latter being due to the escaping carbon dioxide. It is also the essential principle in alcoholic fermentation. In medicine, it has proved of value as an application to foul ulcers and as an internal remedy in putrid fevers. The active principle of yeast is in the form of the yeast fat—Ceridin 3 p. c. and it is found that the therapeutic action of yeast is entirely due to this substance. The therapeutic action of yeast in cases of furunculosis, acne, and similar skin diseases has been known. Dr. Mosse says

that three tablespoonfuls of yeast daily cured many obstinate cases of furunculosis, which did not yield to any other treatment. The use of Ceridin instead of yeast permits of accurate dosage, presents the medicament in a palatable form and obviates the two great disadvantages of yeast treatment, *viz*, the large quantities that have to be taken, and the secondary effects, due to fermentation etc. *Ceridin* is useful for boils, furunculosis, acne, endometritis, leucorrhoea, cervical catarrh and as an aperient. Ceridin (patented drug) is for adults in the form of pills, each pill containing the effective dose of 1½ grs. of the fat:—Dose is 1 to 3 pills three times a day, and for children, in the form of tablets each containing ½ grain of ceridin and 3½ grains of sugar of milk; dose is 1 to 3 tablets three times a day. An extract of yeast that may take the place of insulin, the specific for diabetes, has been recently discovered by L. B. Winter and W. Smith in the Biochemical Laboratory at Cambridge. Great similarity to the pancreatic extract for treating diabetes, which was isolated recently at the University of Toronto, has been shown by this newly discovered solid substance from yeast. The production of an insulin substitute from yeast is considered a great step in advance, for it is expected that it will greatly reduce the cost of preparation of an anti-diabetic drug. Insulin today is almost prohibitive in cost, since it is difficult to prepare and must be taken continually.—(Am. Jour. Pharm.)

1030. Yeast Beer is the ferment used in brewing beer. It is a more or less pure culture of the saccharomyces cerevisivae. It consists of numerous round or

elliptical cells varying in size; it is viscid and frothy and has a peculiar odour and taste. Its chief constituent is *Invertin.* It is a popular remedy for boils; dose is one or two tablespoonfuls. *Nuclein* is a liquid prepared from yeast and stated to contain 5 p. c, nucleinic acid. Doses of 1 fluid drachm three times a day, persisted in for some time, are stated largely to increase the number of leucocytes, which destroy noxious bacilli. Good results are reported in tuberculosis, tonsillitis, diphtheria, etc. Levurine is a French preparation made from yeast. It is recommended for boils and carbuncles. Dose is 1 fluid drachm with meals.

1031. Yeast Toddy (*Eng.*—Toddy. *Hind.* & *Duk.*—Sendhi; Tari. *Tam.* & *Tel.*—Kallu. *Can.*—Henda. *Cing.*—Ra. *Malay.*—Tu-ak) is a saccharine juice obtained by the excision of the spadix, or young flowering branch of the Palmyra, Cocoanut, and other Palms. There are many kinds of Toddy in India, and they are named according to the plants from which they are produced. Toddy is valuable as the basis of a very useful stimulant appli- cations, the *Toddy Poultice*, which is to the Indian what the Yeast Poultice is to the European surgeon. It is prepared by adding freshly drawn Toddy to rice flour till it has the consistence of a soft poultice and subjecting the mixture in an open vessel to heat over a gentle fire, stirring constantly till fermentation commences, or it "begins to rise," as it is commonly expressed. This, spread on a cloth and applied to the parts, acts as a valuable stimulant application to gangrenous or sloughing ulcerations, carbuncles, indolent ulcers etc. "It hastens the seperation of the slough

and establishes subsequent healthy action. Toddy left exposed to the air rapidly undergoes vinous fermentation, and becomes converted into *Arrack*, one of the most intoxicating drinks of the country. This *Arrack* subjected to distillation until it has a specific gravity of 0.920, may be employed as Proof spirit in the preparation of tinctures and for other pharmaceutical purposes, and in the formation of cold evaporating lotions"—(Dr. E. J. Waring).

1032. **Zanona Indica** is a Cucurbitaceae plant (*Sans.*—Dirgha-patra; Kuntali; Pindavalli, *Eng.*—Bandolier fruit. *Hind.* & *Mah.*—Chirpota. *Mal.*—Penarvalli) met with in Assam, Bengal, Ceylon and Malabar Coast. In action it is anodyne; *leaves* beaten with milk and butter are used as an application to quiet the nervous irritation of boils, sciatica and to the chest in cough and asthma. The fruits possess acrid, cathartic properties. The *fresh juice* is said to be an efficacious antidote to venomous bites.

1033. **Zanthoxylum Acanthopodium**; Z. Hamiltonianum; Z. Oxyphyllum are species found in the Himalayas and from Kumaon to Sikkim, Assam and Burma, having properties similar to Z. Alatum. The chemical constituents found from analysis of the plant are Dipentene, O-phellandrene, Linalol, methyl-o-Cinnamate.

1034. **Zanthoxylum Alatum** is a shrub belonging to Rutaceae (*Sans.*—Tejbal; Trimburu. *Hind.*—Tumru. *Ben.*—Nepali-dhania. *Lepcha.*—Tungrukung) common in the temperate Himalaya, in Bhutan and in the Khasia Hills, found also in the Darjeeling District. The bark

contains a bitter crystalline principle identical with berberine; a volatile oil and resin; the carpels contain a volatile oil, resin, a yellow acid principle and a crystalline solid body "Xanthoxylin" consisting of O. C. & H. The carpels of the fruits yield an essential oil isomeric with turpentine like eucalyptus oil in odour and properties; it is said to possess antiseptic, disinfectant and deodorant properties. The *bark* of this and several other species of the same genus contains *berberine*. The *seeds* and *bark* are used as aromatic tonic in fever, dyspepsia and cholera. *Infusion* and *decoction of bark* (1 in 10) are used in doses of 1 to 2 ozs. The *fruit* as well as the branches and thorns are used as a remedy for tooth-ache; also deemed stomachic and carminative.

1035. Zanthoxylum Budrunga (*Hind.*—Budrung. *Assam.*—Brojonali) is a tree indigenous to tropical Himalayas and Assam. Its *fruit* has the odour of lemon peel and contains in its outer coat a fragrant balsam and in the spicy seeds an aromatic oil. It is used as a tonic. The aromatic *root* is sudorific, emmenagogue and febrifuge.

1036. Zanthoxylum Rhetsa (*Bom.* & *Goa.*—Chirphal; Koklee; Tessul. *Tel.*—Rhetsa manm. *Can.*—Jisumi-mara; Jummina. *Cing.*—Katukina) is a plant of the Western Peninsula, from Coromandel and Concan southward; occasionally cultivated in Ceylon. The *fruit* is useful as a condiment in curries. It has stimulant, astringent, aromatic and digestive properties and is prescribed in urinary diseases, dyspepsia arising from atrabilis; also in some forms of diarrhoea; so also the *bark* is used. The *root-bark* is reputed in Goa to be purgative

of the kidneys. The bark is aphrodisiac and bitter aromatic. The fruit with *Ajwan* seeds is powdered, steeped in water and distilled and the distillate is given as a remedy for cholera. In rheumatism the *fruit* is given in honey.—(Dymock).

1037. **Zanthoxylum Triphyllatum** is a resin-yielding tree of Western Ghats, whose capsules have the aromatic properties of those of Z. Rhetsa-(Chakraverthy).

1038. **Zea Mays** is a corn-silk plant belonging to Gramineae (*Sans.*—Yavanala. *Eng.*—Maize; Indian Corn. *Hind.*—Makka. *Ben.*—Bhuththe. *Burm.*—Pysungboo. *Duk. & Hind.*—Mukka-jauri. *Mah.*—Makaibonda. *Tam.*—Mukka-Cholam. *Tel.*—Makka-zonnalu. *Mal.*—Jagung, *Can.*—Bottah. *Cing.*—Munwairingu) is cultivated throughout warm and temperate India. The styles, stigmas and the fecula of the seed are used. The *stigma* or *corn-silk* contains maizenic acid 2 p. c., fixed oil (oleum maydis), resin, sugar, mucilage and salts. Maizenic acid is soluble in water, alcohol or ether. The fixed oil is a viscid transparent liquid of a pale brown colour, non-drying and does not become rancid; its taste is bland; odour is like that of corn-meal. The percentage composion of *undried* grain (according to analysis by Polson) is starch 54.37, nitrogenous substances 8·83, fat 4·50, sugar 2.70, cellulose 15.77, water 12.16, ash 1.67 p.c. Poggiale found on an average in 160 parts of the *dried* grains 64.5 of starch, 9.9 of nitrogenous substance and 6.7 p. c. of fat. The grain is a very nourishing article of food-diet in consumption and relaxed condition of the bowels. It is used for invalids and children under the names of *Polenta* (Maize meal)

and *Maizena* (Maize flour) in Europe. In Greece the silky *stigmata* are used in *decoction* in diseases of the bladder and in America under the name of Corn-silk of which a liquid extract is sold as a remedy in irritable conditions of the bladder with turbid and irritating urine. It has a marked diuretic action. The *meal* is used as a *poultice* and a gruel is also made of it. The *cake*, after the oil is removed, ground into meal is a valuable food. In the Concan an alkaline solution is prepared from the burnt cobs and is given in lithiasis.

1039. **Zehneria Umbellata.** (*Sans.*—Gumthi. *Ben.*—Kudari. *Goa.*—Pipinodo Patare, *Hind.*—Tarali. *Mah.*—Gometta. *Mal.*—Gomth-karwi-vali) is found throughout India. In the form of *confection* of the powdered *root* in doses of 1 to 2 drs., or as *powder* in doses of 3 to 10 grs, the drug is used as stimulant and demulcent. The *juice of the leaves* is used as a soothing application to the skin inflamed by the application of marking nut. The *root* is stimulant and invigorating. In confections it is generally combined with onions, cumin, sugar and butter. It is also given in gonorrhoea and dysuria. With cumin and sugar the *root-juice* is given in cold milk for spermatorrhoea.

1040. **Zingiber Casumunar** or **Z. Purpureum & Z. Cliffordii** is a plant of Scitamineae, (*Sans.*—Vana-ardraka. *Eng.*—Wild ginger. *Hind. & Ben.*—Ban-ada, *Mah.*—Nisa; Malabari halad. *Tel.*—Karu-allamu; Karu pasupu) is found from the Himalayas to Ceylon. Its uses are similar to those of Officinal ginger; it is considered as carminative, stimulant in diarrhoea and colic. The *root* has a pungent odour similar to a mixture of camphor and

nutmeg. The root is found to contain more mucilage and sugar than that of Curcuma aromatica. This drug yielded to analysis :—Essential oil, fat and soft resin, sugar, gum acids, starch, crude fibre, ash, moisture, albuminoids, modifications of arabin etc. In action it is stomachic, carminative and stimulant. Useful in diarrhoea and colic. Other uses are similar to those of turmuric.

1041. ZINGIBER OFFIC NALIS.

(*N, O.*—SCITAMINEAE.)

Sans.—Srangavera ; Adrakam. (dried) Sunta; Nagara; Mahaushada. *Eng.*—Ginger. *Fr.*—Gingembre. *Ger.*—Ingwer. *Pers.* & *Arab.*—Zangebilaralaba. *Hind. Duk. Ben.* & *Punj.*—(dried) Sonth ; (fresh) Adrakh ; Ada. *Cash.*—Sho-ont. *Bom.* & *Guz.*—Adhu. *Kon.* & *Mah.*—(dried) Sunt ; (fresh) Alen. *Arab.*—Zanjabil. *Tel.*—(dried) Sonti; (fresh) Allam. *Tam.*—Shukhu. (fresh) Inji. *Can.*—Hashi-shunti; (dried) Vona shunti. *Mal.*—Chukka. *Cing.*—Inguru. *Burm.*—Gin-sin. (dried) Ginsi-khiav. *Malay.*—Hulya-kring.

Habitat:—Ginger is cultivated in many parts of India; on a large scale in the warm, moist regions, chiefly in Madras, Cochin and Travancore and to a somewhat less extent in Bengal and the Punjab.

Parts Used:—The scraped and dried rhizomes as well as the green ones.

Constituents.—Ginger contains an aromatic volatile oil 0. 25 to 3 p. c., containing camphene, phellandrene, zingiberine, cineol and borneol; gingerol a yellow pungent body; an oleo-resin—"gingerin" the active principle, other resigns and starch.

Action—Aromatic stimulant, carminative and

stomachic, also sialagogue and digestive. Externally, a local stimulant and rubefacient.

Uses.—Ginger is commonly used as a spice and in the preparation of condiments and a *conserve* and *syrup* are made from the fresh younger rhizomes; rhizomes are also pickled. *Dry Ginger* is much used as a carminative adjunct along with black pepper and long pepper under the name of *trikatu*. *Ginger* is extremely valuable in dyspepsia, flatulence, colic, vomiting, spasms and other painful affections of the stomach and the bowels unattended by fever; for cold, cough, asthma, dyspepsia and indigestion is highly recommended a preparation called *Allaepauk* or Ginger-jam or Conserve; it consists of ginger-juice, water and sugar in sufficient quantities, boiled down to the consistence of a syrup, and to which are added saffron, cardamoms, nutmeg and cloves all in powder, and preserved in a well stoppered bottle, chinaware or earthenware. For indigestion with want of appetite etc., equal parts of ginger-juice, lemon-juice and rock-salt, well mixed together or equal parts of ginger and rock salt should be taken just before meals. Ginger with rock-salt taken before meals is said to clean the tongue and throat, increase the appetite and produce an agreeable sensation. For biliousness and delirium through biliousness, two tolas of ginger juice mixed well with seven tolas of cow's milk and boiled down to half its volume and then a sufficiency of sugar-candy powder added to it, is recommended to be taken in suitable doses at bed time; or two tolas each of ginger juice, mango juice, fine sugar and cow's ghee well mixed and melted down to half the quantity is to be taken morning and evening daily. Relaxed sore throat, hoarseness

and loss of voice are sometimes benefited by chewing a piece of ginger so as to produce a copious flow of saliva. Ginger juice rubbed on and around the navel is said to cure all kinds of diarrhoea. A tola each of the juice of ginger and onion mixed together and given is said to relieve nausea vomiting and retching. Ginger juice mixed with sugar-candy and given twice daily is said to be a good remedy for diabetes (both types—mellitus and insipidus). *Dry ginger* is generally used as a corrective adjunct to purgatives to prevent nausea and griping. It is best given either in *powder* in doses of 10 to 30 grains, which may be taken with 5 grains of carbonate of sodium or potash in gout and chronic rheumatism, or in the form of *infusion* (1 in 20) in doses of 1 to 2 ounces every hour. For indigestion, want of appetite etc., the *powder* mixed with ghee or hot water serves as a nice remedy. In cases of dyspepsia, loss of appetite and piles Bhavaprakash prescribes a compound powder "*Samasarkara Churna*"; it is made thus.—Take of cardamoms 1 part, cinnamon 2 parts, flowers of Mesua ferrea 3 parts, black pepper 4 parts, long pepper 5 parts, dried ginger 6 parts, sugar in quantity equal to all the other ingredients; powder and mix. Dose is about a drachm. The same recommends a *confection* named *Saubhagya Sunti* much used as a carminative tonic in dyspepsia and in disorders of the alimentary canal in females after confinement. It is made as follows:—Take of clarified butter 16 tolas, milk 4 seers, sugar 6¼ seers, dry ginger 1 seer; boil them together so as to make an electuary. Then add coriander 24 tolas, fennel seeds 40 tolas, Bahering seeds, cumin seeds, nigella seeds, long pepper, black pepper, ginger, tubers of

Cyperus rotundas, leaves called *Tejapatra*, flowers of Mesua ferrea, cinnamon and cardamoms each 8 tolas in fine powder and stir with a ladle till cold. In painful affections of the bowels, stomach, etc., *infusion* of dry ginger is given with the addition of a tablespoonful or two of Castor oil to the dose of the infusion. Dry ginger with *Sajjikhara* and a little of asafoetida is also a popular home remedy in such cases; or a mixture of *Sonth* 4 parts and Aniseed 1 part fried in half the quantity of ghee and the whole powdered is taken daily in suitable doses, mixed with jaggery. In chronic rheumatism, *infusion of Sonth* (1 in 24) taken warm just before going to bed, the body being covered with blankets so as to produce copious perspiration, is often attended with the best results. The same treatment has also been found beneficial in colds or catarrhal attacks and during the cold stage of intermittent fever. Bhavaprakash gives a preparation named *Sunta ghrita* made with a decoction and paste of ginger root, clarified butter and *Kanjika* as usual. It is said to be useful in rheumatism. Malabar Vaidyans hold that juice expressed from fresh ginger in gradually increasing doses is a strong diuretic in cases of general dropsy whatever the cause may be. This method was tried "in three cases of ascites with dropsy arising from cirrhosis of liver of recent origin and there was, when the juice was so administered, complete subsidence of ascites and disappearance of the dropsy. "The fresh juice of the drug acted as a strong diuretic. The patients passed gradually increasing quantities of urine daily. It did not prove efficacious in dropsy of chronic Bright's disease and chronic heart disease; on the other hand such cases became worse under its

use. Long-standing cases of cirrhosis with ascites did not derive the slightest benefit from its administration. I have no doubt that fresh ginger juice, when properly administered will be found beneficial in cases of early cirrhosis of the liver with ascites and dropsy of the lower limbs. The dose and method of administration:—Fresh juice of ginger expressed from 5 tolas weight of the drug mixed with an equal quantity of sugar is to be given on the first day in the morning. This is to be increased by juice expressed from 2½ tolas weight of ginger daily unti the juice from 25 tolas weight is administered. The quantity is to be diminished in the reverse order every day till it comes back to juice from 5 tolas weight. If there is still any dropsy left, another course ought to be gone through in the ascending and descending order. The patient should be put on milk and *conjee* diet. This deserves a further trial."—(Dr. Koman in the Ind. Drugs Report, Madras). In sciatica and other forms of rheuma tism a compound oil named *Saindhavadya Taila* is recommended in Chakradatta for local application ; it is made as follows :—Take of dry ginger 40 tolas, rock saltl long pepper root and plumbago root 16 tolas each, marking nuts 20 in number, fermented rice water 16 seers, sesamum, oil 4 seers, boil them together and prepare an oil in the usual way. Internally asafoetida fried in the infusion of *Sonth* and castor-root with the addition of *sanchal* salt is given; this is said to be useful for the relief of gouty pains also. In headache ginger paint or *plaster* made by rubbing *Sonth* with a little water applied to the forehead affords relief. A *paste* made of *Sonth*, cinnamon, castor-root and clove.

taken in equal parts, is applied to the head to cure neuralgic headache or ginger juice mixed with milk is recommended by Chakradatta to be used as snuff. Toothache and face-ache are sometimes relieved by the same application to the face. In the collapse stage of cholera powdered ginger is rubbed to the extremities, to check the cold perspiration, improve the local circulation, and to relieve the agonising cramps of that terrible disease. In cases of fainting etc., dry ginger rubbed to thin *paste* with water, is a nice *anjan* applied to the eyelids or the *powder* of *Sonth* and *Omum* or of *Sonth*, black pepper and long pepper sniffed up the nostrils in small pinchfuls like ordinary snuff is very successful in cases of fainting, stupor, delirium and senselessness through brain fever etc. In vaginismus powdered *Sonth* well mixed with castor-oil or with the paste of castor-root, is applied to the painful parts. The following are a few additional home remedies made of ginger:—(1) Take of ginger 1 gr., Soda bicarb. 3 grs., and rhubarb 2 grs. Useful for a child's digestive. (2) Take of ginger powder 2 grs., Ferri sulp. 2 grs , and rhubarb 2 grs. Dose is 1 powder after food as a tonic twice a day. (3) Take of Ginger 10 grs.- *Ajowan* 1 drachm, cardamom powder 30 grs; dose is 1 powder after food twice a day, for indigestion—(Bird, wood). (4) Mix a tola each of dried ginger powder and sugar; a small quantity of this to be taken when the stomach-ache arises. (5) Take 1 tola of extracted juice of ginger and 1 tola of Gigantic swallow-wort (*mudar*) roots, and pestle well in a mortar to be made into pills of the size of black peppers. In cholera cases administer this pill with luke-warm water.—(Bhishagratna Pdt . J. L. Duveji.)

1042. Zingiber Zerumbet (*Sans.*—Sthulagranthi. *Hind.* *Ben.* & *Punj.*—Mahabari-bach ; Nar-kachur, *Mal.*—Kathu-inshi-kua) is a plant widely cultivated throughout India. This wild ginger has the aromatic flavor of Zingiber Officinalis mixed with some bitterness. The rhizome is used like the Officinal ginger. It is employed as a hot remedy for coughs, asthma, special diseases, worms, leprosy and other skin diseases—(Baden-Powell).

1043. Ziziphora Tennier is of the genus Labiatae (*Eng.*—Wild thyme. *Ind. Bazaar*—Mishk-i-taramshia. *Pers.*—Ranga shiraz) is found in Persia and Baluchistan. *Infusion* of the flowering plant (1 in 20) is used in doses of ½ to 1 fluid ounce as stimulant, carminative, lithontriptic, emmenagogue and expectorant. It is similar to *phudina* and *bhadaranboye*. Large doses cause haematuria; it is given in cough and other chest affections; in uterine diseases such as amenorrhoea, dysmenorrhoea etc.

1044. Ziziphus Glabrata; Z. Trinerva (*Sans.*—Vata-dalla. *Tam.*—Carookoova. *Tel.*—Kakoopala) is found in Eastern Bengal and Bhutan, Western Peninsula and the Niligiri Mountains. A *decoction of the leaves* is given to purify the blood in cases of cachexia and as an alterative in old venereal affections—(Ainsle).

1045. Zizyphus Jujuba; Z. Laccifera ; Z. Anoplia is a moderate sized tree belonging to genus Rhamneae (*Sans.*—Badari ; Kola. *Eng.*—Jujube fruit. *Fr.*—Jujubier Cotonneux. *Ger.*—Stumpfblattriger Judendorn. *Hind.*—Baer. *Ben.*—Kula. *Pers.*—Kunar. *Bom.* & *Mah.*—Bor. *Tel.*—Regu. *Tam.*—Elandai. *Can.*—Bogari; Ilichi. *Mal.*—Ilantha) found wild and cultivated in many parts of India and Burma. The *fruit of the wild variety*

is very acid and astringent. It is eaten raw and also preserved by drying. The *fruits of the cultivated varieties* are more palatable and less acid. When ripe and dried it is a mild laxative and expectorant. The fruit is made into a *preserve* by removing the stone and adding chillies and salt and the whole is made into a cake. This is good for checking bilious complaints and improving digestion. The fruit contains mucilage and sugar in addition to fruit acids. It is believed to purify the blood and assist digestion. The *bark* contains much tannin and a crystallizable principle, Ziziphic acid. The bark is astringent and a simple remedy is diarrhoea, in the form of *powder* or *decoction*. The *powdered bark* is a domestic dressing to old wounds and ulcers. The root is useful as a decoction in fever and delirium. The *juice of the root-bark* is used as a purgative and externally in gout and rheumatism. The *tender leaves* and twigs are used in the form of *paste* as an application to boils, abscesses and carbuncles; they promote suppuration.

1046. **Zizyphus Napica** (*Sans.*—Kakoli. *Ben.*—Kankla. *Mah.*—Kattivatigai. *Tel.*—Teumani chettur) is a plant growing in Nepal. Its *root* or *tuber* has a sweet scent like that of milk. Since it is very difficult to obtain Ayurvedists advise the use of *Asvagandha* or *Satamuli* as its substitute. It is sweet, nutritive, phlegmonous, aphrodisiac and beneficial in diseases of bile, wind, blood, burning of the skin and fever"—(N. N. Sen Gupta.)

1047. **Zizyphus Nummularia**; Z. Microphylla (*Sans.*—Balakapriya; Aja-priya; Bhu-kartaka; Sukshmaphala. *Punj.*—Jharberi. *Sind.*—Nundo-jangro. *U. P.*—Malla; Ber; Jhari. *Can.*—Parpalli. *Guz.*—Ganger. *Mah.*—

Chanya-bor; Jungle-bor is met with in the Punjaub, Guzurat & Western Peninsula. The *fruit* is used in bilious affections and considered to be cool and astringent—(Stewart).

1048. Zizyphus Oenoplia (*Ger.*—Sciefblattriger Judendron) is a species found in Ceylon and Java, where the bark is used as a febrifuge and digestive tonic —(Chakraverthy).

1049. Zizyphus Rugosa; Z. Glabra (*Hind.*—Churan. *Mal.*—Todali. *L. Burma.*—Mayankai. *U. Burma.*—Mitha-Tabu. *Bom.*—Churna; Toran) is a native of Eastern Himalaya, South India, Western Peninsula and Ceylon. The *flowers* with an equal quantity of the petioles of the betel leaf and half as much lime are given in four-grain pills twice a day for menorrhagia—(Dymock).

1050. Zizyphus Sororia (*Sans.*—Karkandhu. *Ben.*—Seya-kul) is another species found in Bengal and East Indies, whose *fruits* are small and have an astringent sourish taste, but when ripe and dried are used as an expectorant, and the *leaves* as an alterative.

1051. Zizyphus Vulgaris (*Sans.*—Soubira. *Fr.*—Jujubier cultive. *Ger.*—Gemeiner Judendorn. *Arab.*—Unnab. *Pers.*—Sinpo-i-Jilani. *Hind.*—Titm-ber; Kandiari. *Punj.*—Sanjit. *Bom.*—Khorasani-bora. *Eng.*—Jujub berries) is found in the Punjaub, Himalayas, Kashmir and Baluchistan. The best (*dried*) *fruits* mixed with honey are used as demulcent and expectorant in pectoral complaints. The *dried fruits* are regarded as suppurative, expectorant and blood-purifier. A *syrup* of the dried fruits is used for bronchitis. The

bark is used to clean wounds and sores. The *gum* is used in certain affections of the eyes and the *leaves* when chewed are said to destroy the power of the taste of disagreeable medicines—(Dymock). The fruit contains mucilage and sugar. The *bark* and *leaves* contain tannin; the wood contains a crystallizible acid *viz*., zizyphic acid, tannin and sugar. The following are useful home remedies —(1) Take of Z. Vulgaris I lb, sugar 2 lbs, and pure water 3 lbs. Prepare a syrup. Dose is from ½ to 1 dr.. diluted with twice its quantity of cold water. Used in the early stage of fever, bronchitis, and pneumonia. (2) Take of Z. Vulgaris 7, Cordia latifolia (*Sapistan*) 10, dry ginger 10, Cichorium endivia 3 drs., Viola odorata 2 drs., and water 12 ounces. Prepare an infusion. Dose is one-third part every three hours, in constipation, biliousness etc.

1052. **Zizyphus Zylopra** is a species found in Ceylon and East Indies with edible kernel.

1053. **Zygophyllum Simplex** of the genus Zygophyllea (*Punj.*—Alethi. *Sind.*—Putlani) is found in sandy deserts, Sindh, Punjab and Arabia. The Arabs beat up the *leaves* in water and apply the *infusion* to the eyes in ophthalmia.

THE
INDIAN MATERIA MEDICA
PART II.

(MINERAL KINGDOM)

1. ADAMAS.

Sans.—Heeraka; Vajra. *Eng.*—Diamond. *Fr.*—Diamant. *Pers.*—Almas. *Hind. Ben. & Mah.*—Heera. *Tel.*—Bajar. *Mal. & Tam.*—Vayaram. *Can. & Kon.*—Vajra.

Source :—Obtained from mines, formerly from Golconda, Deccan; now mostly from Johonesburg in South Africa.

Characters.—A gem of the most valuable kind consisting of pure carbon and remarkable for its hardness and clear transparency and brilliance.

Classification.—It is divided into classes according to its colour and form:—The *white* coloured is called *Brahman caste*, the *red* coloured is *Khshatriya*; the *yellow* variety is *Vaishya*; the *black* variety is called *Sudra*. The *round* sized one with high gloss and line or spot is termed *male*.

Purification & Preparation.--Diamond is purified by being enclosed within a lemon and boiled in the juice of the leaves of Agati grandiflora. It is reduced to powder thus.—A paste is made of the root of a cotton plant with

the juice of some betel leaves, both the vegetables being not less than three years old. The diamond is then enclosed within this paste and roasted in a pit of fire. This process is repeated seven times, when the stone is easily reduced to a fine powder. Another process consists in roasting the diamond enclosed in a paste made of horn-shavings for three times in succession; it can also be purified after having it beaten with horse's urine and then cooking it in the *putapaka* process.

Action.—Diamond thus prepared is said to be a powerful alterative tonic and stimulant that improves nutrition, increases the strength and firmness of the body and removes all sorts of diseases. Dose is about 1 grain. It is said to generate the secretion of semen and is always preferred for medicinal purposes. For internal administration prepared or purified *white* diamond is preferred, the *red-colored* is beneficial in various diseases and prevents premature death. The *yellow* variety is said to give strength. The *black* variety is also said to be beneficial in several ailments.

Uses—Diamond forms an ingredient of several alterative and tonic medicines such as *Trailokya Chintamani Rasa*, *Ratnagiri Rasa*, *Sarvangasundra Rasa* etc. which contain besides diamond, pearls, gold, iron, talc, mercury, etc., in varying proportions and are used in similar cases. *Trailokya Chintamani Rasa* contains diamond, gold and pearls one part each and iron, talc and *Rasa Sindura* or red preparation of mercury 4 parts each, rubbed together with the juice of Aloe Indica and made into two-grain pills. Another preparation called by the same name contains, the above ingredients

minus iron and also prepared coral, orpiment, realgar and aconite. It is said to be useful in gastric disorders, general debility, asthma, phthisis, diarrhoea, colic, anaemia, sexual debility etc. Dose is 1 to 3 pills of one grain each , three times a day.

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2. ALUMEN.

Sans.—Sphatikari; Surashtraja. *Eng.*—Alum; Sulphate of Alumina and Potash or of Aluminum and Ammonium. *Pers.*—Shab-i-yemeni; Zake bilor. *Arab.*—Shabb Zaje-abyaz. *Hind.*—Phithari. *Duk.*—Phatkari. *Ben.*—Phitkiri. *Bom.*—Sambemani. *Guz.*—Phatkari. *Mah.*—Turati; Phatki. *Tam.*—Shinacarum. *Tel.*—Pattikäramu. *Can.*—Phatikära. *Cing.*—Shina-karan. *Burm.*—Khin; Kyouh-kyen. *Malay.*—Tawas.

Source.—Chiefly found with peroxide of iron in Silajit or in Alum earths of Nepal or prepared from the alum shale in the Punjaub, Behar and Cutch States. As found in the bazaars, it is often mixed with impurities; it may be rendered fit for medicinal purposes by dissolving it in boiling water, straining the solution and evaporating it so as to obtain crystals, which should be preserved for use.

Characters.—Colorless, transparent crystals, with acid, sweetish astringent taste.

Action.—Astringent, caustic, haemostatic, antispasmodic and antiseptic; irritant and purgative in large doses; emetic in repeated doses. It constringes small vessels and organic fibres and thus acts in diminishing the exhalations, secretions and supply of blood to a part.

Uses.—It is useful in leucorrhoea, haematuria, haemoptysis, menorrhagia, gastric and intestinal catarrh

and other haemorrhages; in fluxes of the respiratory passages with profuse ropy mucous phlegm; in chronic diarrhoea and dysentery and in atonic discharges generally. In chronic diarrhoeas, a mixture containing 10 grains of alum, 5 drops of laudanum and 1½ ounces of infusion and of acorus root, given thrice daily is useful. In the diarrhoea preceeding cholera and in the diarrhoea of phthisis, a compound powder of alum, catechu and cinnamon each 10 grains mixed with honey is given in repeated doses. It is useful also in strangury and vomiting in small doses *i. e.*, 2 to 10 grains. Ten grains of it are said to arrest the spasms of asthma. In narcotic poisoning in children it is a good and efficient antidote. In whooping cough, after the first or acute stage has passed, alum in doses of 2 to 4 grains according to age of the child, given twice or thrice a day, in the form of *powder* or in *solution* in Omum water (1 in 60) in doses of a teaspoonful to a dessertspoonful for a child from 1 to 4 years old, given thrice a day is most beneficial. For asthma and cough alum 5 grains in half an ounce of rose water is given twice a day. Persons bitten by serpents are made to drink butter milk or water mixed with 6 *mashas* (72 grains) of good alum powder—(J. L. Duveji). In obstinate cases of malaria *dessicated alum* in 5 grain doses with some aromatic compound powder to disguise the taste given 2 hours before the expected rigour with only a teaspoonful of water has given very satisfactory results. In injuries which result in concussion of the brain or spinal cord or in severe sprains or fractures the first thing given is alum 5 grains with treacle or sugar. In croup a teaspoonful mixed with

honey or syrup is said to be an excellent emetic. In obstinate hiccup one-drachm doses given two or three times a day induce vomiting and stop hiccup. If the powder is taken with very little water there is less likelihood of its inducing vomiting. In frequently repeated doses of 30 grains alum relieves lead colic by precipitating soluble salts of lead. Alum 45 grains mixed with treacle is given internally for guineaworm. Alum in 5 grain doses thrice a day with the juice of Adhatoda vasica is said to work wonderfully in certain forms of leucorrhoea, especially when the flow is tinged with blood. In haemorrhages from kidneys, uterus and other internal organs alum in doses of 10 to 12 grains thrice daily with or without opium is given with benefit, but not when much fever is present. Alum whey prepared by boiling for 10 minutes two drachms of powdered alum in a pint of milk and strained is beneficial in doses of ½ to 2 ounces thrice daily in menorrhagia and bleeding piles. Dr. H. C. Sen has "derived satisfactory results" from alum whey in cases of enteric fever. It is said to be palliative in diabetes and albuminuria also. Externally alum forms one of the ingredients of some hair dyes and hair lotions. It is applied in a saturated solution *i.e.*, 5 p.c., in bleeding from the nose, gums, vagina or the rectum; as a styptic, in leech bites, cuts etc.; in prolapsus ani and prolapsus uteri. Locally applied it checks sweats in the armpits, groins and sores of the feet. Weak solution (1 to 2 p.c.) is used as a lotion to ulcers and chilblains; as a gargle it is used in relaxed or ulcerated sore throat, aphonia, atony of the larynx,

spongy or bleeding gums, loose teeth, ulcers of the mouth and tongue, fissures of the tongue in consumption, in excessive salivation etc ; it is locally applied in diphtheria croup and pharyngitis ; as a collyrium (preferably mixed with rose water) it is used in chronic and purulent ophthalmia, generally in what is known as country sore eyes, especially among children for whom a solution of 3 grains to an ounce of water or rose water is sufficient. Its solution is also used as an injection in gleet and leucorrhoea. In inflammation round the ear, a paste made of alum and gypsum equal parts and *Gile Armani* is applied ; in otorrhoea it may be dropped into the ear. In recent ecchymoses, contusions, sprains etc., *poultices* made of wheat bran and the solution of alum or of 30 grains of powdered alum mixed with the white of an egg are highly useful ; the latter are useful chiefly in cases of severe blows on the eye and the consequent pain, heat and swelling. In aphthae and thrush, spongy gums and other affections of the mouth powdered alum with honey is used with benefit. It is often sprinkled over indolent ulcers, especially chronic umbilical ulcers of infants, and used as a *snuff* in epistaxis ; or a *gauze* wet with alum lotion (5 p. c.) is plugged in the nose. Similar alum *plugs* combined with glycerine or alum douches may be used in leucorrhoea. The solution may be used also as a nasal *spray* if the lesion is higher up in the nose. In cases of post partum haemorrhage or menorrhagia, sterilized cotton plugs saturated with alum *powder* or sterilized alum *lotion* (5 p. c.) immediately stop the bleeding. A lotion made of alum and borax

40 grains each and 8 ounces of water is useful in weeping eczema. Alum powder mixed with talc and zinc oxide is a good remedy for sweating feet. A powder composed of alum 1 part and *gile-armani* (Armenian Bole) and Catechu ½ part each is an application to swollen gums and in toothache. In bleeding piles, cloths saturated with a solution of alum in decoction of galls or of Babul bark (in the proportion of 2 drachms of alum to 8 ounces of the decoction) are kept constantly applied to the parts; this is useful in prolapsus of the anus especially in children. A weaker solution *i. e.*, of two drachms to the pint of the decoction, forms a useful *gargle* in diseases of the mouth and throat above mentioned and as useful *injection* in leucorrhoea and other vaginal discharges. In discharges from the urethra, caused by a sore or excoriated surface between the prepuce and the head of the penis often confounded with gonorrhoea, a four p. c. solution applied twice or thrice daily is very beneficial. For gleet and urethral stricture, Zad-Garib prescribes for injection a lotion made of alum 1 tola, *Nila tutiya* (blue vitriol) 70 grains and water 1 seer, dissolved by aid of heat, strained and cooled. This is used for urethral injection. In chronic gonorrhoea 1 or 2 p. c., solution with potassium permanganate is used. In old chronic, spreading and gangrenous ulcers an application made of alum 4 dr., catechu 1 dr., opium ½ dr., and ceromel or *Kokum* butter or ghee 1 or 2 ounces applied on a soft rag, night and morning is very excellent. For bed sores or where these are likely to occur, a mixture of 30 grains of burnt alum and the white of an egg, is painted over the part. For enlargement of the joints especially that of the knee

and for other swellings from blows, bruises or sprains, cloths wet with the lotion of alum 4 drs., vinegar and *Arrack* 1 pint each, are kept applied to the affected part. In scorpion bites, alum moistened with water and locally applied affords instantaneous relief—(Dr. Saunders.—Waring.)

3. **Alumen Exsiccatum** (dried or burnt alum) is used as an astringent and caustic to check unhealthy granulations; used in indolent ulcers and ulcerative stomatitis.

4. **Aluminii Silicas** (*Sans.*—Kharyamitti *Eng.*—Felspar; Clay; Silicate of Alumina. *Hind.*—Chikni or Sufaid mitti; Lang-i-dalam. *Duk.*—Khar; Dhoi-huvi-khari. *Pers.*—Kadi; Gilsufeid. *Guz.*—Khadu. *Tam.* & *Tel.*—Namon. *Mal.* & *Can.*—Nama) under peculiar circumstances and by the action of the Carbonic acid gas of the air suffers after a long time complete decomposition and is converted into a soft, friable mass of earthy matter resembling soft mortar. When the decomposing rock contains, besides felspar, oxide of iron, the clay produced is iron-coloured. The dark appearance of some clay is due to its containing bituminous matter. Prepared or purified pipe-clay is used in medicine as a dusting powder.

5. **Gopichandan** (*Sans.*—Shoraktri. *Hind.*—Pani-soka. *Ben.*—Sugandamitti) is so named from a lake called Gopi, near Dwarka, wherefrom it is taken. It is a kind of clay brayed in water like *chandan* used by the Hindus to make sectarian marks on their faces, chests and arms. It is a manganesium iron and an aluminium yellow earth found in pieces of various shapes. Its smell resembles that of *Multani mati*, another kind of clay.

Water poured upon it is soon absorbed. It is used as an absorbent powder dusted on unhealthy ulcers and wounds. It is cooling and dessicant. It is applied to the forehead with rose-water to relieve headache, and also to inflamed boils.

6. Kaolinum (*Sans.*—Gairika. *Eng.*—China clay; Porcelain clay; Red ochre. *Ben.*—Girimati. *Hind.*—Geru. *Cing.*—Kiramatti) is a native white aluminium silicate found in Ceylon, China etc. It is obtained by purifying native white felspar or aluminium silicate by elutriation which removes silica and undecomposed felspar. It is thus converted into a soft. friable, whitish, earthy mass. It is pulverizable, insoluble, in water or in dilute acids. Pure Kaolin contains alumina 70, silica 26, and iron oxide 4 p. c. It has been in medicinal use since the earliest dawn of medical history. Discorides of Cilicia, who lived about the dawn of the Christian Era, describes five different kinds of clay in medicinal use in his materia medica. Galen attributes its discovery to Hermes Trismegistes, the teacher of Aesculapius. Avisenne, most famous of Arab physicians (980 to 1039 A. D.), describes the various kinds of clay in medicinal use in his era. In the middle ages it came to be extensively used for all sorts of complaints, such as epilepsy and cardiac diseases, and not unnaturally fell into disrepute under such improper usage. Subsequently in slight demand as an excipient for pills and pastes, it has remained for Stumpf of Wurzburg in 1898 to almost re-introduce this valuable medicament to the profession. His attention to its value was first drawn by noting in 1882 that a corpse which had been buried for 37 months, and which

was then exhumed for medico-legal examination, had been buried in a clay soil and was in a most extraordinary state of preservation. In 1886 he commenced to use clay as a paste in the treatment of old-standing septic wounds with most gratifying results as to deodorisation, protection from irritation, and healing. In 1900 Stumpf began the internal treatment of cases of cholera, dysentery and diarrhoea by oral administration of kaolin. During the period after the Treaty of Bucharest when the Serbian armies returned to their homes, Dr. Kuhne was in charge of a cholera camp in Belgrade and also of a similar one at Nish. During this period Dr. Stumpf came to Dr. Kuhne and begged to be allowed to treat the cholera cases with kaolin. Cases which were apparently desperate were handed over to him, with the result that next day they were not dead, but recovering. Persevering in this line of treatment, the mortality in these cholera camps dropped from 44p. c. to 3 p. c. *It proved far more efficacious than injections of anti-serum, injections of iodine, or hypertonic saline treatment. Also it was far more practicable.* Dr. Kuhne writes that he has now adopted kaolin treatment in all general cases of intestinal disorder in place of bismuth, charcoal, talc etc. In the treatment of cholera, the following prescription is advocated.—Into 250 c. c. of cold boiled water pour 100 gms. of finely pulverised kaolin. This is shaken until a perfectly homogeneous, yellow-white creamy liquid is obtained. A tumblerful of this mixture is given to the patient orally every half hour or every hour to six or more doses. As a rule, after the sixth dose the patient falls asleep and all acute symptoms are over. The treatment is continued with smaller dosage

over the next few days and the patient should be able to leave hospital in from 5 to 10 days' time. If it should prove impossible to administer the emulsion by the mouth it may be given by the stomach tube or by enema,—giving at least three litres of the suspension per dose in the latter case. When making the emulsion the kaolin should always be added to the water, and not *vice versa.* Other accessory treatment the author considers to be superfluous. For the first 18 hours after the admission nothing else should be given by the mouth except plain cold water. The advantages of kaolin treatment—if it be as successful as the author claims (says the Indian Medical Gazette, Feb. 1926) are obvious. It can be administered by any one, even by the patient himself; accurate dosage is not necessary ; in an hour a medical attendant can deal with a hundred patients; the treatment is not painful, is free from danger, and requires no special appliances ; it can be used as a prophylactic measure ; it is equally applicable to all forms of diarrhoea and dysentery; lastly it is very cheap. Should the true diagnosis be choleraic diarrhoea and not true cholera, only good and not harm is done.

In action kaolin probably owes its value to (a) adsorption on the surface of its fine molecules of toxins ; thus, it is of great value in cases of food poisoning also ; (b) its mechanical protective coating of the acutely inflamed gut. Finally, the range of therapeutic application of kaolin is not confined to intestinal disorders ; it is of value in infantile diarrhoea ; as a local application in diphtheria of the throat and on burns ; for local treatment in leucorrhoea and in vaginal and uterine inflammation and

lastly, for disinfection of the surgeon's hands before operation, where thorough rubbing of the hands with purified kaolin will—it is believed—remove all septic infection from the skin without causing the irritation of the skin so common with the use of the usual surgical antiseptics. "Personally" says the editor of the Gazette "we have now been using kaolin in the treatment of intestinal disorders for some two years—especially in the treatment of bacillary dysentery. Morson's electrically precipitated "Osmo-kaolin" is probably the best preparation. It may be said that such treatment is exceedingly well tolerated by the patient ; is often very successful from a clinical point of view; and is a measure of distinct therapeutic value. The usual dose given is 2 drachms suspended in water or milk every four hours during the acute dysenteric phase". For other uses of kaolin see B. P.

The different kinds of clay are the mineral deposits from the disintegration of felspathic rock. They are, besides Kaolin, as follow:—(1) Red bole or Ochre (*Guz.*—Gerumati) is a Silicate of Alumina and oxide of iron. (2) Bole Armeniac (*Guz.*—Gule Armani) is Silicate of Alumina Magnesia and oxide of iron. (3) *Multani Mati.* and *Gopichandan* are both varieties of Bole Armeniac & (4) Pipe Clay (*Guz.*—Khadu) above referred to.

A mixture of clay and vinegar is used by peasants in some districts as a cooling local application in fevers. In the treatment of aneurism, in neurosis of the heart and in the treatment of the disagreeable pulsations in hysteria, clay is applied with success ; after an application of a *paste* of clay to a pulsatile tumour, not

only the subjective conditions as the asthmatic symptom and cardiac pain, but also the objective symptoms namely the pulsation and the volume of the tumour become diminished—(Prof. Botkin, Dr. Pirogoff and other Russian surgeons). In cases of hysteria, not only the epigastric pulsations become reduced, but also the intensity of the other disturbances of the abdominal organs, with the disappearance of the vomiting, diarrhoea and abdominal pains, become notably reduced. In Wologda (Russia) women soothe the pains of hysteria by applying clay to the soles of the feet. Dr. Loueachevitch reports several cases of gonorrhoeal epididymitis promptly cured by the application of white moulding clay of Sculptors made into a paste with water. The dressings are removed twice a day; the swellings are said to subside on the 2nd or 3rd day. Pale or yellow Ochre (*Vern*:—Multani mati) is used externally in combination with fresh lemon juice and oil or curd and rose water for rubbing and washing head, which removes dandruff, softens the hairs, and keeps the head cool. Pipe clay and ammonium chloride in equal parts made into a paste are applied to the temples in headache.

7. **Ammonium Chloride** *Sans.*—Navasara. *Eng.*—Sal ammoniac, *Arab.*—Armina; Mithunnar. *Punj. & Pers.*—Noshadara. *Cash*—Nausadan. *Hind.*—Navasadara. *Ben.*—Navasagara. *Duk. Guz. Mah. & Kon.*—Navsager. *Tam. & Cing.*—Navachcharam. *Mal. & Tel.*—Navasaram. *Burm*—Lovas) as obtained in the bazaars is generally very impure in dirty white or brownish translucent cakes. It is obtained by the combustion of

excretions of various animals or of animal matters or by burning coals or common salt. It is a secondary product in the manufacture of coal gas. It is generally obtained in India from unburnt extremities of brick-kilns in which manure of animals, especially camel's dung is used as fuel. To this coal and common salt are added and sublimed. It is thus obtained in white granular crystals or transparent masses. It is readily soluable in water and is highly deliquescent. It has a saline, disagreeable, nauseous and pungent taste. It can be purified and made into a powder by dissolving in hot water and evaporating to dryness and then bottling. In action it is alterative, expectorant and cholagogue in small doses; in large doses purgative. It has a marked stimulating action on the mucous membranes, increasing their secretion also on the absorbent system and on gland structures. It relieves hepatic congestion and modifies hepatic secretions; useful in cases of hepatic abscess, chronic hepatic congestion and in dropsy connected with the liver and ovarian diseases; in cirrhosis and in jaundice from catarrh of the bile ducts. For hepatitis, sal-ammoniac 8 to 15 grains, mixed with 105 grains of Absinthium (worm wood), rubbed well in a mortar with a little water and given in a single dose is said to give relief (Hakim & Vaidyan). In gastric catarrh in biliousness with coated tongue, foetid breath, flatulence etc., in bronchial and vesical catarrh, in chronic pharyngitis with glairy mucous secretions and whooping cough it is valuable, combined with liquid extract of glycyrrhiza or syrup of Country liquorice and with a few grains of powdered

cinnamon, in cases of whooping cough. In amenorrhoea, dysmonorrhoea, gleet, leucorrhoea, chronic dysentery and other similiar chronic discharges from lungs, stomach and other internal organs it is given dissolved in *conjee* water (2 drachms to a pint) in wineglassful doses every second or third hour. In various forms of neuralgia, in chronic liver diseases, organic or functional, in rheumatic affections of the face etc., it is given in infusion of Indian Sarsaparilla ; in intermittent fever, in sick or nervous headaches, acute alcoholism and in delirium tremens its action is very marked, given dissolved in camphor julep. In dropsy due to liver disease and in that following fevers, it is administered with infusion of Moringa or decoction of Astercantha. As an alterative it acts by slowly modifying the nutrition of the tissues ; it is a useful agent in chronic inflammatory diseases of the glands such as thyroid body, liver and spleen and in induration of the uterus, ovaries and the prostate and externally for fomentation in the form of a lotion (1 in 80). In urinary diseases chiefly where the urine is full of lithates it is very useful. *Externally* its solution combined with nitre is a nice cooling and stimulant application to the head in headache, mania and apoplexy, and for inflamed erysipelas and hernial tumours ; in inflamed hydrocele, indolent tumours, in enlarged glands, in milk abscesses occurring after confinement and abscesses in other parts of the body before formation of matter, in chronic skin diseases and as a dressing for bruises and blows on the eye (black eye). For milk abscesses etc., it is used as lotion with *Arrack* and rose water (1 in 8 and 160 parts respectively).

Mixed with sulphide of arsenic, it is used as an application to scorpion bites. As an *inhalation* in affections of the air passages its vapours produced by heating a drachm of it on a dish, are useful. Ammonium Chloride is recommended for local application in cases of cataract—(Ilaj-ul-Gurba).

8. Antimony Sulphide (*Sans.*—Srotonjana : Sauvira. *Eng.*—Kermes mineral; Black antimony. *Ben.*—Surma. *Hind.*—Anjan; Surmaka-patthar. *Arab.*—Ismad ; Kohal. *Pers.*—Sagl-surmah. *Guz*—Surme; Kuhl-anjan. *Duk.*—Anjan. *Mah.* & *Kon.*—Surmav. *Tam.*—Anjanamai. *Tel.*—Nilanjanam ; Katuka. *Can.*—Anjana. *Burm.*—Tay-lak-youk) is found in Vizianagram and in several parts of the Punjaub. It is a tersulphide of antimony purified by fusion and reduced to a black powder. The powder is used as an application to the eye-lids and eye-brows especially by women in Upper India and as a cosmetic to improve the personal appearance. When thus applied it is supposed also to protect the eyes from the glare of the sun by absorbing the rays. An *Anjan* or Collyrium is recommended by Pdt. J. L. Duveji as a cure for impaired eye-sight, ophthalmia, cataract, itching, redness, irritation etc., in the eyes, in short as a remedy for several eye-complaints. It is prepared thus.—Take half a tola each of borax, purified ammonium chloride, cuttle-fish-bone, saltpetre, *Sang-basri*, alum flower, kernel of Butea frondosa root, and kernel of mustard seeds and ten tolas of antimony (sulphide) and pestle them well in a mortar for three hours mixing lemon juice. Sieve well after getting them dried in a shady place before filling in phials, which should be kept well corked. Internally

antimony sulphide is seldom used, except occasionally as a tonic for horses.

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9. ARGENTUM.

Sans.—Rajata; Rupya; Tara. *Eng.*—Silver. *Fr.*—Arzgent. *Ger.*—Silber; L. Argentum. *Ben.*—Rupa, *Arab.*—Fazzeh; Faddah. *Pers.*—Nokra. *Hind.* & *Mah.*—Chandi. *Guz.*—Rupun. *Kon.*—Rupeh. *Tam.* & *Mal.*—Velli. *Tel.*—Vendi. *Can.*—Belli. *Cing.*—Peddi. *Burm.*—Ngway.

Source.—Found throughout the mineral kingdom in a metallic state often alloyed with other metals, gold, arsenic, copper etc., or combined with sulphur, iodine chlorine etc. There were silver mines in Sind, Agra, Delhi, and Lahore—(Ain-i-Akbari). In ancient times silver was obtained from galena(lead sulphide) which contains a minute quantity of silver. Even now silver is derived from this source in many places—(Jour. Ayur. Feb. 1926).

Characters.—A soft, white, brilliant and ductile metal; it does not oxidize when exposed to the air, but is soon tarnished by vapours of sulphur. It is purified in the same way as gold.

Preparations.—Silver leaf is prepared like gold leaf; *Tara Bhasma* (Black oxide of silver). Silver leaves are treated with twice their weight of Cinnabar and heated in the subliming apparatus. The mercury rises up and collects in the upper vessel and silver in powder form remains in the lower vessel. Prepared silver is thus *sulphide* of silver and not oxide of silver. It contains 84 p. c. of silver and 16 p. c. of sulphur. Dose.—of the leaf, —1 to 2 grains; of the powder.—$\frac{1}{8}$ grain.

Action.—Silver leaf and *Bhasma* (powder) are tonic, stimulant and aphrodisiac. Silver is said to be "acidulous sweet, astringent, cool, demulcent, purgative, emetic, constipative, alleviative of wind and bile"—(N. N. Sen Gupta). According to Rasaratna Samuchhaya it is "acid-sour in taste, sweet in action, cooling, purger, destroying of *Vayu* and *Kapha*, appetiser, enervator of digestive heat, rejuvenator and nourisher of memory and intelligence."

Uses.—The silver leaf and powder are given in combination with stimulant confections and with various aphrodisiac medicines. They are highly recommended in excessive heat in the body, hectic fever, phthisis, chest affections, impotence and seminal weakness; also in painful and irritable condition of the stomach and intestines, in heart-burn and in chronic diarrhoea, in uterine diseases as leucorrhoea, menorrhagia etc., and in irritability of the uterus. Silver enters into the composition of several remedies as *Yogaraja* (See under Asphaltum), *Jayamangala Rasa*, *Vrihat vata gajankusa* etc. In hysteria, hypochondriasis and other nervous affections, a *confection* made of *gaozuban*, amber, silver leaves and sugar equal parts is useful. As an alterative tonic and aphrodisiac in general debility, impotence etc., a pill known as *Mahalakshmi-bilas Rasa*, is used; it is made up of the oxides of silver and orpiment (prepared) 1, prepared Talc 8, prepared mercury and sulphur each 4, prepared tin 2, prepared copper ½, camphor, nutmeg and mace each 4 and seeds of Argyreia Speciosa and of dhatura each 2 parts, all mixed together, rubbed with the juice of betel leaves and made into pills of about 6 grains each. In dyspnoea of phthisis a preparation known as *Kanchanabhra*

is recommended; it is composed of gold and silver, *rasa-sindura* (red sulphide of mercury), burnt coral and pearl, iron and mica, musk, realgar, and emblic myrobalan. In asthma and other complaints of difficult breathing, a preparation named *Swasa Gajankusa* made of gold and silver, mica, tin, camphor, red sandal wood, clove, *malati* flower (Echites Caryophyllata) with juice of Adhatoda vasaka, is recommended. In cases of obesity, a preparation made of silver leaf 4, long pepper 6, black pepper 2, Cyperus rotundus 2, rock salt 2, and borax 4 parts; the whole triturated in cow's urine is useful. Dose is grains 2 to 10 or even 20, It also increases appetite etc—(Khory). *Externally* the powder has been used on sore nipples, foul ulcers etc. Silver leaf applied to ulcers forms a soluble albuminate with the serum excreted. Other actions and uses of silver are similar to those of gold, but somewhat inferior.

10. ARSENIOUS ACID.

Sans.—Sankhavisha; Darumucha; Sambalakshara. *Eng.*—White oxide of arsenic; White arsenic; flowers of arsenic. *Arab.*—Sammula far. *Pers.*—Margemosha, *Hind.*—Sankhya. *Duk.*—Safed sambala. *Ben.*—Sumbulkhar. *Guz.*—Somal khar. *Mah.*—Sankhya sambala. *Tam.*—Vella pashanum, *Tel.*—Tela pashanum. *Can.* & *Kon.*—Sankha pashana, *Burm.*—Tein; Hypso. *Cing.*—Sudu pasanum. *Mal.*—Waran-ganpulih.

Source.—Found in arsenical ores as arsenates of iron, nickel or cobalt; commercial arsenious acid is obtained by roasting the native ores, in the form of a sublimate. The metal arsenic is widely distributed in nature, but in small quantities. With oxygen it forms arsenious acid.

Characters:—The by-product arsenious acid exists as a solid, heavy, white powder, or stratified masses or minute transparent and glass-like crystals, tasteless, soluble in water (1 in 100), in boiling water (1 in 10), in glycerine (1 in 5), very slightly in alcohol, in alkalies and their carbonates and in hydrochloric acid.

Action.—In very small doses, it is stomachic, general and nervine tonic, alterative and antiperiodic; and a cardiac, respiratory, intestinal and sexual stimulant. Externally, irritant. "Arsenic alters our constitution in such a manner that our vital resistance becomes capable of combating many diseases"—(H. C. Sen).

Purification.—For medicinal purposes white arsenic is purified by being soaked in lemon-juice or the juice of the plantain tree. Dr. H. C. Sen's method consists in boiling the powdered arsenic tied in a cloth for about 3 hours in milk on a slow fire and subliming it in a closed vessel. This boiling in milk is said to mitigate its action; sublimation increases its penetrating power.

Uses.—It is used in a variety of diseases; but chiefly in fever, either alone or combined with other substances. Some physicians administer ghee containing arsenic (sublimed or atomised after being boiled in milk on a slow fire for a long time, so that the sublimate may be absorbed in the cream) in gradually increasing doses from a minim to two with milk. This preparation is said to have better effect than those of the B. P. To increase immunity from diseases arsenic is administered in gradually increasing doses, generally in the beginning of winter or in the rainy season. To

prevent the cumulative action of the drug and also to soothe its irritative effect a mild purgative, generally the infusion of the three myrobalans in purgative doses is taken during the course of arsenic. During the course plenty of fatty food like milk, ghee, butter etc., should be taken. In chronic liver complaints, in lienteric diarrhoea, arsenic in minute doses is very useful. In very bad cases of diarrhoea with anasarca, minute doses of arsenic with opium are administered with great benefit; but salt and water are stopped altogether until the patient is fairly convalescent—(H. C. Sen). A preparation known as *Jvarabrahmastra* prepared in cow's urine and in the juice of Celsia Coromandeliana (*Kokasima*) and prescribed in Tantroctah for recent and chronic fevers, ague and remittent fevers is administered in minute quantities (the weight of a mustard—about one-ninth of a grain) with a lump of sugar in intermittent fever before the paroxysm comes on. Another preparation called *Darubrahma rasa* is recommended in Sankshipatasarah; it consists of white arsenic, cinnabar, datura seeds and long pepper, equal parts, made into four-grain pills with lemon juice; they are given with the juice of Ocimum Sanctum in remittent fever with shivering, incoherent speech or wandering, profuse perspiration or much heat of body, & difficult breathing. *Chandesvararasa* is yet another preparation recommended by the same authority and consisting of equal parts of mercury, sulphur, aconite, prepared copper and white arsenic, prepared in the juice of fresh ginger and in the juice of Vitex Negundo, and made into pills, about a

grain each and administered with the juice of fresh ginger. Along with this medicine, innunction with oil, cold bathing and nourishing food should be used. In Malaria, Dr. R. L. Puranik of Nanded (Deccan) has been using concentrated infusion of chiretta with Liquor Arsenicalis in minim doses and the preparations of *Gulancha* with great success, even where quinine and neo-salvarsan have failed. Pills made of Arsenic, sulphide of mercury, chebulic myrobalans and *Trikatu* (the three acrids) are used in malaria, anaemia, diabetes, psoriasis etc., in doses of 1 to 4 pills of 1 grain each, three times a day after meals. These were tried in 59 cases of malaria, in the out-patient's Department of the General Hospital, Madras, and "found to be useful in checking the attacks of malarial fever"—(Ind. Drugs Rept. Madras). Dr. H. C. Sen says that "the use of arsenic (prepared in the Ayurvedic method) with the three myrobalans or simply chebulic myrobalans or any other mild purgative to prevent its cumulative action is sufficient to save the villagers from dyspepsia or malaria. Arsenic when taken in large doses and continued for a long time often leads to emaciation and gastric and intestinal catarrh. As a rule it should be taken after meals. Enlarged lymphatic glands often yield under its treatment. By its use obesity is cured. It is useful in chorea occuring in delicate children, in neuralgia of the 5th nerve, intercostal neuralgia and that of miasmatic origin. In neuralgias it should be combined with quinine and given in large doses. In pulmonary phthisis, in chronic coryza, bronchitis acute and chronic, and in gastro-intestinal disturbance associated

with diarrhoea, arsenic is highly useful. A preparation known as *Brihat Kasturi Bhairab* consisting of arsenic, gold and silver, musk and camphor, copper and mica, the dried seed of Mucuna pruriens and Pavonia odorata, Embelia ribes, Cyperus rotundas and ginger, is recommended in dyspnoea with fever, collapse, delirium etc. It is very effective in sloughing of the mouth, sore throat and cancrum oris. In leucorrhoea and diabetes it has been found useful. In chronic diarrhoea in children minute doses of arsenic judiciously used have given good results.

Externally it is used to remove large growths as cancer and lupus; also used locally to kill vermins in the head and other hairy parts. *Cigarettes* made of tissue paper impregnated with the solution of arsenic are used with benefit in asthma. As a caustic arsenic is applied to piles. A *butter* or *oil of arsenic* prepared by churning a mixture of it and a *paste* made of the roots of Calotropis gigentia and Nerium Odoratum is used as a nervine tonic and aphrodisiac. It is useful in asthma, cough and seminal weakness; it is administered in betel-leaves, by giving them a coating of the oil by means of a stick or probe. Dose of the oil is one sixtieth of a grain. A *ghee* is prepared by taking ½ dr. each of white arsenic and opium, and four ounces of Nerium Odoratum, finely powdering and mixing them with 8 pounds of ghee and heating the whole over a fire for 4 hours and filtering and keeping for use when required. Also an oil is prepared by powdering *Gumchi* seeds (Abrus precatorius) and croton seeds, aconite and white arsenic, all in equal parts, and mixing them with goat's milk and expressing oil out of the mass.

This oil is kept for use when required. These are useful as external medications in impotence etc. A few simple useful remedies:—(1) Take of *Somala bhasma*, (prepared by taking purified arsenic and submitting it to a process of roasting) 1 gr, Borax 100 grs. Make a paste in the leaf-juice of Azadirachta Indica. Dose is 10 to 20 grains; used in quartan fever. (2) Take of *Somala bhasma*, & Sulphide of Mercury, each 1, Anacyclus pyrethrum 5, and Pistacia khinjuk 4 parts. Make a pill mass with honey. Dose is 3 to 5 grains. Used in secondary or tertiary syphilis. (3) Take of *Somalabhasma* 1, Solanum Jacquinii 20, lime juice 20 parts. Make a pill mass. Dose is 1 grain; used in syphilitic rheumatism, cough and asthma. (4) Take of *Somalabhasma* 1, Carbonate of Soda 1, impure carbonate of potash 1, Piper longum, and Piper nigrum, each 5 parts. Dose is gr. ½; used in asthma. (5) Take of white arsenic 1 grain and white sugar 1000 grains. Mix and powder them *finely* in a mortar; dose is 2 to 4 grains as alterative and anti-emetic—(Hakeem Ahmed-ud-deen Saheb, Lahore).

During administration of arsenic, chillies, oil, asafoetida and other hot and spicy things should be avoided. Milk, sugar, ghee, butter, grams and other nutritious substances should be taken in large quantities.

11. **Bisulphuret of Arsenic** or Arsenicum Rubrum (*Sans.*—Manashila, *Eng.*—Realgar or Red orpiment. *Port.*—Rosalgar. *Fr.*—Sulphure rouged arsenic. *Ger.*—Arsensulphur. *Arab.*—Zurneik surkh. *Pers.*—Yaranikhee surkha. *Hind.*—Lal Haratal; Lal Sambal. *Guz. Mah. Kon.* & *Can.*—Manasil. *Tam.*—Kudire-palpashanam. *Mal.*—Warangan) is artificially prepared by fusing

arsenious acid 5 parts with sulphur 3 parts. It is purified by being rubbed with the juice of lemons or of ginger. It is used as an alterative, febrifuge and tonic, given in fever, cough, asthma and skin diseases; in these last it is used also externally. Locally it is applied to fistulous sores. In fever it is generally used in combination with mercury, orpiment etc., as in the following:—*Chandesvara rasa* already mentioned under "Arsenious Acid" is recommended in Rasendrasarasangraha for remittent fevers. *Svasakuthara Rasa* is another preparation mentioned in the same, and consisting of realgar, mercury, sulphur, aconite, borax, black pepper, ginger and long pepper is recommended in asthma with cough and in remittent fever with cerebral complications. Dose is 4 grains in pill form. In coma from remittent fever, these pills are powdered and used as a *snuff* to rouse the patient; also used similarly in cephalalgia, hemicrania, ozoena etc. Realgar mixed with the ashes of Achyranthus Aspera is applied to patches of leucoderma or white lepra. In leprous ulcers a *liniment* composed of realgar and orpiment 2 parts each, black pepper 4 parts, sesamum oil 20 parts and the juice of Calotropis gigentia 5 parts is recommended as application in Chakradatta. The same recommends for application to the eye, in affections of the internal tunics, tumours or other growths, night blindness etc., a preparation known as *Chandraprabha Varti* which is made of realgar, galena, conch-shell lime, seeds of Moringa pterygosperma, long pepper, liquorice and the kernel of belleric myrobalan in equal parts rubbed together with goat's milk, dried and made into small *pastils*. These are rubbed with a little honey and applied to the eyes as a collyrium.

Bhavaprakash recommends an *oil* for application to fistulous sores; it is prepared as follows:—Take of sulphur, realgar and turmuric 8 tolas each, mustard oil 1 seer, juice of datura leaves 1 seer & water 4 seers. Boil together in the usual way.

12. Trisulphuret of Arsenic (*Sans. Mah. & Ben.* Haritala. *Eng.*—Orpiment; Yellow sulphuret of arsenic. *Hind. & Duk.*—Haratala. *Arab.*—Ursanigum. *Pers.*—Zarneik-zard. *Guz.*—Aratal. *Tam.*—Arridaram; Yellikud pashanam. *Tel.*—Daddipashanum. *Can. & Kon.*—Ardala. *Burm.*—Hsaydan-Shwaywa. *Cing.*—Aridala) is found native in China and Persia. Orpiment occurs in two forms *viz.*, in smooth shining, gold-colored scales called *Vansapatri haritala* and in yellow opaque masses called *Pinda haritala*. The former is preferred for internal use as an alterative and febrifuge. *Pinda haritala* is chiefly used as a colouring ingredient in paints and for sizing country paper to preserve it from the ravages of insects, which it does most effectually. Haritala is purified for internal administration, by being successively boiled in *Kanjika*, the juice of the fruit of Benincasa cerifera, sessamum oil and a decoction of the three myrobalans for three hours in each fluid; or it may be boiled in the mixture of all these fluids together to save time, as done by some physicians. The dose of the purified orpiment is 2 to 4 grains. It is generally known as *harital bhasma*. As an antiperiodic and alterative tonic it is given to cure fevers and skin diseases, to increase strength and beauty and to prolong life; also in incipient phthisis and asthma, paraplegia, hemiplegia, monoplegia and facial

paralysis, in cough, chronic fever, gonorrhoea, epilepsy, dropsy etc. It is generally used in combination with other ingredients. Pills known as *Ramban Rasa* composed of orpiment, sulphur and asafoetida are recommended in asthma and chronic skin diseases as eczema, psoriasis etc., in doses of 1 to 4 pills of one grain each with ghee three times a day after meals. "This preparation was administered to cases of asthma and rheumatism and was fairly beneficial in giving relief to the patients in those diseases"— (Ind. Drugs Rept., Madras). A preparation called *Mahalakshmibilas* composed of mercury and sulphur, arsenic (*harital*), iron and mica, tin, copper, aconite, camphor, nutmeg and mace and seed of Gmelina asiatica is recommended in *Vayu* & *Kapha* (asthma). It is given rubbed with betel leaf juice. In fevers it is used in combination with mercury, aconite etc; for example, the *Vetala rasa* recommended in Bhaisajyaratnavali, is made of equal parts of purified mercury, sulphur, orpiment, aconite and black pepper; these pills of two grains each are given with the juice of fresh ginger in remittent fever with affection of the brain. In enlargement of spleen and other abdominal viscera, *Vidyadhara rasa* described in Rasendrasarasangraha is recommended; it is made up of mercury, sulphur, prepared copper, iron-pyrites, realgar and orpiment in equal parts, rubbed together and then soaked in a decoction of long pepper and in the milky juice of Euphorbia nerifolia, and made into pills of 6 grains each. These are given with honey. In chronic irregular fever with intestinal worms and blood

parasites, a preparation called *Kitari Rasa* consisting of realgar, mercury and sulphur, *indrajav, bonjowan* and *palash* and juice of Luffa Amara is given with the juice of Phaseolus Roxburghii and sugar as vehicle. For all sorts of chronic skin diseases Bravaprakasha prescribes a compound called *Talakesari rasa* which is composed of orpiment, realgar, iron pyrites, mercury, borax and rock salt one part each, sulphur and burnt conch shell two parts each, rubbed together for a day with lemon juice, then with aconite 1/30th part of the weight of the whole mass; dose is 5 to 10 grains with butter; this should be followed by two drachms of the powdered seeds of Vernonia anthelmintica mixed with honey and ghee. A similar prescription is given in Sarangadhara under the name of *Mahatalesvara*. A cure for leprosy has been advocated by Pandit J. L. Duveji and it is this:—"One *ratti* or half of *harital bhasma* to be taken daily with betel. Oil of Copaiba should also be rubbed over the affected parts. This is a successful remedy. The patient should take sweetmeats". As an *external* application for skin diseases, especially in psoriasis Sarangadhara prescribes a *paste* made of orpiment, wood of Berberis aristata, seeds of Raphanus Sativus, wood of Pinus deodara and betel leaves each two tolas and burnt conch-shell half a tola, beaten together with water into a thin paste. Also as a *depilatory*, orpiment forms an ingredient of several formulae for the removal of hair; *e. g.*, a paste made up of conch-shell-lime (soaked in the juice of plantain tree) and of orpiment in equal parts; or of conch-shell-lime two parts, orpiment and impure carbonate of soda one part each and realgar half a part

rubbed together with water, both of these are recommended in Sarangadhara. For leprous ulcers a *liniment* made of orpiment and realgar 2 parts each, black pepper 4 parts, sesamum oil 20 parts and the milky juice of Calotropis Gigentia 5 parts, is useful. For warts and corns the *liquor* of purified orpiment is applied locally. In cases of ringworm an *ointment* made of harital 1 part and sweet oil 2 parts is useful for external application. For suppurating scrofulous glands an *oil* made of yellow and red orpiment, marking nut, cardamoms, Indian aloes sandalwood, Valeriana Hardwickii and Jesamine each 1 part, Neem oil 40 parts and water 100 parts, boiled together and prepared in the usual way, is a highly useful application.

13. ASPHALTUM.

Sans.—Silajit ; Silaras. *Hind. Guz. Mah. Ben. Can* etc :—Silajita. *Eng.*—Asphalt ; Mineral pitch ; Jew's pitch. *Arab.*—Hajar-ul-musa. *Pers.*—Momiai Faqurul Yahud. *Hind.*—Ral-yahudi. *Tam.*—Perangyum.

Source.—Produced from rocks during the hot weather in the Vindhya and other mountains where iron abounds ; or it may be a tar formed in the earth from the decomposition of vegetable substances.

Characters.—This bituminous substance is dark, sticky and unctous, of a bitter taste and of a smell resembling cow's stale urine. This is known as *gomuthra Silajit.* The other variety found in the bazaars is called *Karpoora Silajit* which occurs in white plates. On igniting it leaves a large quantity of ash consisting of lime, magnesia, silica and oxides of iron. The black variety is the one mostly used in medicine.

Chemical Composition.—It contains 65 p. c. of urea. Analysed it "yielded water 9.85 p. c., organic matter 56·20 and mineral matter 34.95 p. c., containing nitrogen 1.03, lime 7.80, potash 9·87, phosphoric acid ·16 and Silica 1.35 p. c. It dissolves in water and is neutral in reaction".

Action.—Locally antiseptic, anodyne parasiticide, and antiphlogistic. Internally alterative, tonic, slightly laxative, cholagogue, respiratory stimulant, disinfectant and expectorant, intestinal antiseptic, diuretic and lithontriptic.

Uses.—Charaka says "There is hardly any curable disease which cannot be controlled or cured with the aid of *Silajit*". It is used by Kavirajees and Hakims in a great variety of diseases. It is specially employed in genito-urinary diseases and in diabetes; in gall stones, jaundice, enlarged spleen, fermentative dyspepsia, worms, piles, adiposity, anasarca, renal stone, anuria etc; hysteria, neurasthenia, epilepsy and insanity; amenorrhoea, dysmenorrhoea and menorrhagia; scrofula, tuberculosis and leprosy; eczema, elephantiasis, anaemia, anorexia, biliary congestion; in diabetes in which it reduces the quantity of sugar and urine. But it increases the quantity of urea; therefore it should never be given in uric acid calculus. It diminishes phosphaturia and is useful in phosphatic concretions. It is also useful in ascites, uraemia, cholaemia and the like. It is valuable in cases of diabetic albuminuria, where both casts and albumin diminish; it is said to be a cure for diabetic amaurosis. An extract is made from crude *Silajit* by making an emulsion of it with hot water and repeatedly exposing the emulsion to the sun. A

cream floats on the surface and it is removed and collected. The process is continued as long as any cream rises. The extract of *silajit* thus collected is sun-dried and then purified by being soaked in a decoction of *triphala* and *dashamula*. It is said to be a powerful tonic and alterative useful in a variety of diseases. Dose is 6 to 12 grains. But it is generally begun with 1 grain or so, and gradually increased. Dr. Koman says that he had used this medicine with *Abhrak bhasma* in two cases of diabetes (22 grains of sugar to the ounce and 36 grains to the ounce) and the sugar disappeared completely after about 3 weeks' treatment, the accompanying symptoms such as excessive flow of urine, thirst, neuritis of legs etc., having also subsided to a considerable extent. Both the patients were on milk and bread diet. He also adds that a few years ago he "saw a case of chronic cystitis deriving much benefit from the use of *Silajit*, which was administered by an Unani Physician"—(Ind. Drugs Rept, Madras.) *Silajit* contains an oil which when distilled is known as ichthyol. *Silajit* is used as a paste and *bhasma*; to prepare paste, macerate *silajit* in the juice of Margosa leaves, *gulancha* and ghee; and to prepare *bhasma*, take *Silajit* and sulphur 20 parts each and orpiment 10 parts, mix together, triturate in the juice of *bijorun* and roast. Dose is 1 to 2 grains. The *bhasma* is given in retention of urine, scalding due to gravel, gonorrhoea, leucorrhoea, also in cough, diabetes, consumption etc. As a tonic it is given in anaemia and general debility; as abortifacient it causes uterine contractions and promotes expulsion of the foetus. As an anthelmintic, its suppositories are used to remove ascarides from the rectum. The *paste*

is locally applied to relieve rheumatic pains in joints, used as an embrocation in paralysis, contusions etc; also in sprains and bruises. Internally *Silajit* is very useful in chronic dyspepsia, and dyspeptic diarrhoea, given with the decoction of emblic myrobalans; in biliary colic and jaundice with the decoction of the three myrobalans or of *dasamula*. In dyspepsia due to hepatic derangement, *silajit* is used in combination with other cholagogues. In the first stage of ascites it is used with iron-rust together with milk diet; salt and water is stopped altogether. Rice and milk boiled together into gruel is a good dietary in commencing cirrhosis of the liver of adults. In the first stage of infantile cirrhosis *shilajit* is used with other cholagogues like the juice of the leaves of Andrographis paniculata, of Cajanus Indicus or of Nyctanthus Arboritrestis. In false angina pectoris even during the absence of paroxysms it is recommended. It is very useful in acute and chronic bronchitis and in bronchiectasis, in asthma with bad liver and indigestion, in the asthma of gouty people, in pulmonary phthisis, in diabetic phthisis and in intestinal tuberculosis. In sexual weakness it is generally administered with *Asvagandha* ; in spermatorrhoea with grape juice or infusion of the three myrobalans; in chronic gonorrhoea and gleet, with preparations of tin, lead, silver etc. It can also be used red oxides alone with much benefit. In functional menorrhagia complicated with biliousness and hepatic derangement it is commonly given with the decoction of emblic myrobalans, or combined with astringent drugs like catechu, flowers of Woodfordia floribunda or syrup of the corm of red lily. In leucorrhoea from debility it is given with

milk or with astringents. In strangury or painful micturition *Silajit* is used with other diuretics and demulcents like the decoction of Tribulous terrestris, Glycyrrhiza glabra etc. In albuminuria and chyluria it is beneficial with the decoction of astringents like catechu, Shorea robusta, juice of leaves of Cajanus Indicus, or of garlic. In hysteria it is generally used with infusion of Valeriana Jatamansi or decoction of Alhagi Mourorum and in insanity with the infusion of the three myrobalans, or decoction of *dasamula*—(H. C. Sen). As an alterative tonic it is used in combination with iron as in the following confection called *Yogaraja* mentioned in Chakradatta. It is made of *Silajitu*, prepared iron, iron pyrites and silver each 5 parts, the three myrobalans, ginger, black pepper and long pepper, plumbago root and baberang seeds each 1 part, and sugar 8 parts, all powdered, mixed and made into a confection with honey. Dose is about half a tola; used in anaemia, jaundice, consumption, chronic fever, skin diseases, urinary diseases, piles etc. A pill made of *Silajit* 2 parts, Tribulus terrestris 5 parts and honey 2 parts is used in urinary diseases, scanty urine, cystitis etc. Dose is 10 to 15 grains. A powder called *Pachanabheda Churna* made of equal parts of *Silajit*, Carbonate of iron and lime, long pepper, *Jangli-chichondi* (Trichosanthes Cucumerina) is used in gonorrhoea, leucorrhoea and other mucous discharges. Dose is 10 to 15 grains. Dr. H. C. Sen concludes that *Silajit* should be tried extensively in obesity, diabetes, dyspepsia, anasarca, enlargement of liver and spleen, painful and bleeding piles, asthma, strangury, renal diseases and functional uterine troubles; that continued use of

this remedy appears to remove the tendency to formation of renal and biliary calculi; that it is far better and safer than morphia injection in biliary colic. Because morphia relieves temporarily, but *Silajit* cures permanently and morphia does harm to the liver in the long run by stopping the secretion, whereas *Silajit* is a valuable cholagogue and laxative. The Hindu and Mahomedan physicians consider *Silajit* to be one of their sheet anchors in diseases of the genito-urinary system.

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14. AURUM.

Sans.—Suvarna. *Eng.*—Gold. *Fr.* and *Ger.*—Geld. *Arab.*—Zahab. *Pers.*—Zara Tita. *Hind. & Mah.*—Sona. *Guz.*—Sonum. *Ben.*—Sonar. *Tam*—Ponnu. *Tel.*—Bangarroo. *Can.*—Honnu; Chinna. *Kon.*—Bhangara *Mal.*—Tangam. *Cing.*—Ran-ta-hadu. *Burm.*—Shuc-saku.

Source.—Found in primitive rocks, in alluvial deposits in small particles called gold dust. It is found commonly alloyed with other metals such as silver copper, iron etc.

Characters.—Pure gold has a metallic lustre reddish yellow colour; it is the most ductile of all metals softer than silver. It acquires lustre under pressure. It is not attacked by any acid except selenic acid and a mixture of which like nitro-hydrochloric acid, contains nascent chlorine.

Preparations.—Gold leaf and gold ashes. Dose.—of the gold leaf 1/30 to 1/12 grain; of the powder 1/6 to 1/3 grain; of the *bhasma* 1/10 to ¼ gr. Gold leaf (*Sona varak*) is prepared by beating gold into extremely thin leaves. Gold powder or ashes (*Sona bhasma*) is

prepared by rubbing together two parts of mercury and 1 part of leaf gold into a mass with lemon-juice, placing it in a crucible with three parts of sulphur. The crucible is then covered and exposed to heat. This process is repeated 14 times when the gold completely loses its metallic character, and becomes reduced to a dark brown impalpable powder. This process is advocated by Kaviraj Binod Lal Sen. But according to books gold should be rubbed with mercury only the first time and in roasting it afterwards sulphur alone should be placed in the crucible with the gold—(U. C. Dutt).

Action.—Gold and its preparations are nervine and aphrodisiac tonic, resolvant, emmenagogue and alterative. They are said to increase strength and beauty, improve intellect and memory, clear the voice and increase sexual powers; also stimulate the activity of the stomach, and of the skin and kidneys causing diaphoresis and diuresis. They also increase the flow of menses in women. In large doses, they act like irritant poison setting up gastro-enteritis with convulsions, cramps, insensibility etc. The *antidotes* are egg albumen, milk, flour etc.

Uses.—Preparations of properly reduced gold are used in fevers, consumption, insanity, diseases of the nervous system and urinary organs, hysteria, epilepsy, leprosy, asthma, nervous dyspepsia, amenorrhoea, impotence, sterility, habitual abortion, chronic Bright's disease, chronic metritis, syphilis and scrofula. Gold leaf is generally eaten with betel leaf; when given in the juice of Eclipta prostrata, it is supposed to stimulate virile powers and to act as alterative; with the juice of

Ayapana or juice of garlic or juice of Cactus grandiflorus it is given in tuberculosis; when given with *Punarnava* (Boerhavia diffusa) it is said to improve the sight. In case of poisoning it is given with the juice of *Nirbishi* (*Ayapana*—the sensitive plant), in insanity, with the powder of dry ginger, round pepper and cloves; as a rejuvinator with butter or ghee or cream of milk; as an aphrodisiac with milk and sugar or candy powder; as a memory invigorator, with sweet flag; for lustre of health, with saffron; for heart-disease with milk and bark of Terminalia Arjuna and cane sugar. *Suvarna Vasanta Malti*, a preparation containing leaf-gold, pearl, red sulphide of mercury, zinc carbonate and black pepper is used in impotence, chronic fevers, gonorrhoea, syphilis etc; dose is 2 to 5 grains in pill form mixed with honey. Rasendrasarasangraha recommends a pill known as *Jayamangala Rasa* which contains besides gold, sublimed mercury, cinnabar, prepared copper, tin, sulphur, borax, prepared iron and silver, iron pyrites etc. Dose is 4 grains. It is taken with cumin seed powder and honey; useful in old chronic fevers of all sorts; it is said to be a powerful tonic and alterative, administered with suitable adjuncts in many diseases. In the same book is recommended a powder called *Mriyanka Rasa*, which consists of mercury, prepared gold, sulphur, pearls and borax; it is administered in doses of one to four grains with about twenty grains of black pepper powder, in phthisis. Two other preparations named *Pottali Hemagarbha Rasa* and *Ratnagarbha pottali Rasa* which are used in this disease are made up of the same ingredients but in varying

proportions. *Suvarna Parpati* is another preparation, which is composed of mercury, gold and sulphur and used like *Rasa parpati* in chronic diarrhoea and anasarca. Milk diet is enjoined and water and salt are prohibited. Dose is grains two gradually increased to ten in the course of 21 days, to be again gradually reduced to the original dose of two grains in another three weeks. Another preparation used in the same diseases is *Vijayaparpati* which contains diamond, pearls, silver, copper and talc in addition to gold, sulphur and mercury.

Prepared gold in doses of two grains daily with the addition of honey, ghee and emblic myrobalan, or root of Acorus Calamus is recommended to be taken for a lengthened period—(Sandehabhanjanee). It is also given to feeble infants in a few days after birth, as it is said to impart strength and beauty, in the following composition:—Take of powdered gold, root of Acorus Calamus and Aplotaxis Auriculata, Chebulic myrobalans and leaves of Herpestes Monniera equal parts; powder and mix. Dose is two grains with honey and ghee The principal alterative tonic of the Ayurvedic physicians is a well known preparation called *Makaradhvaja* which is prepared with the aid of leaf-gold, mercury and sulphur. Although gold is used in its preparation, properly speaking it is a preparation of mercury and sulphur, sublimed in the form of red sulphide as in the preparation of mercury called *Rasasindhura*; the gold may possibly exercise some catalytic influence during the process of sublimation. The dose is one grain daily with honey or other suitable adjuncts,

given in general and nervous debility, brain fatigue from excessive mental work, habitual constipation, womb complaints after delivery, spermatorrhoea etc. Mixed with some stimulant drugs *viz*:—the camphor, nutmegs, black pepper and cloves each 4 parts and musk 1/16 part to every part of *Makaradhvaja*, it is used as an aphrodisiac under the name of *Chandrodaya Makaradyvaja*. Dose is one pill of ten grains each, given with milk or enclosed in betel leaves to be chewed. Diet ought to be generous consisting of milk, ghee, pulses etc. It is useful in nervous debility, impotence, premature old age etc. A pill named *Brihat Kaphaketu* which is made up of gold, pearl, burnt coral, mica and *Makaradhvaja*, made into pills with mother's mi k is generally used in the asthma of children, with irregular pulse and cold extrem ties. *Brihat Kasturi Bhairab* containing gold, silver etc. (mentioned under "Arsenic") is useful in dyspnoea with fever, collapse, delirium etc. In dyspnoea of phthisis and *prameha*, *Brihat Kanchanabhra* is recommended; it consists of gold and silver, copper, tin, iron and mica, pearl and coral, *Rasasindur*, *Baikranta*, musk, cloves and mace. An exhaustive list of preparations containing gold as used in a large number of diseases is given in the "Journal of Ayurveda" of March 1925, to which the reader may refer. Dr. H. C. Sen highly commends the use of chloride of gold in low continued fevers, especially of typhoid state, for "keeping up the vital centres and heart". He generally used oxide or chloride of gold in very small doses. To prevent spasms and to give tone to the nervous system he used the bromide of gold, "with satisfactory results". He used chloride of gold in doses of 1/20 to 1/12 of a

grain in many cases with or without the decoction of Semicarpus Anacardium to remove the tremors noticed in the muscles of the wrist and fingers of patients exhausted from continued fevers and to steady the functions of the brain after meningeal troubles. The chloride of gold has been much lauded as a remedy for confirmed dipsomania. The tribromide of gold (dose $\frac{1}{4}$ to $\frac{1}{2}$ grain in pill made with Kaolin) is used for hysteria, epilepsy etc. The use of gold in tuberculosis is also recommended by some modern western authorities:—"In 1890 Koch showed that a salt of gold inhibited the growth of tubercle bacilli in a solution as weak as one in a million. In 1917 Felot and Spies introduced a preparation of gold named "Knysolgan" which was used in the treatment of tuberculosis. Recently Prof. Holger Moellgaard has a new inorganic compound of gold and sodium under the name of "Sacrocrysin" which is said to materially check the growth of tubercle bacilli in a solution of one in a million and to arrest it completely in a solution of one in 100,000. Serum from a tuberculous animal was given by intramuscular injection in doses of 20 to 40 cc. m. and proved potent in counteracting the tuberculin shock caused by the sacrocrysin. In non-technical language, a serum is injected into the blood to prepare it for digesting the dead tuberculosis bacilli. Either before or after the blood is thus prepared, a new substance "Sanocrysin," is injected in weak solution; Sanocrysin kills the bacilli; the serum eliminates the poisons which have been caused by the presence of the dead bacilli. Sanocrysin according to "Medical Science" review, is a compound salt of gold and sodium. It is

a solid snow-white substance composed of long needle-like crystals. Its activity is amazing. A solution of 1 in 100,000 kills the bacillus and of 1 in 1,000,000 prevents its growth. Sanocrysin without the serum kills the bacilli, but it also kills the patient when it is tried on animals. But where its administration is combined with a serum it has healed animals even when the case was an advanced one. At present the use of Sanocrysin is only in its infancy, but good medical opinion holds that the world is on the eve of a discovery which will revolutionise treatment and perhaps exterminate tuberculosis.

15. CALCIUM (*Eng.*—Lime).

Several sorts of lime are used in Hindu medicine; thus we have lime from Limestone (*Sans.*—Churna); Calcined cowries (*Kapardaka bhasma*); Conch shells (*Shanka bhasma*); Bivalve shells *Sukti bhasma*; Snail shells (*Sambuka bhasma*). The various kinds of lime are found free in nature. These shells are purified by being soaked in lemon juice and are prepared for use by being calcined within covered crucibles. Lime is used internally in dyspepsia, enlarged spleen and other enlargements in the abdomen and externally as a caustic. Lime enters into the composition of a great many prescriptions of different sorts of dyspepsia; *e. g.*—A compound pill called *Amrita Vati* prescribed in Bhaishajyaratnavali for loss of appetite and indigestion contains calcined cowries, aconite and black pepper in 5,2 & 9 parts respectively, made into two-grain pills. In the same is mentioned another compound pill named ***Agnikumara Rasa*** containing calcined cowries, conch-

shells and aconite 3 tolas each, borax, mercury, and sulphur 1 tola each, and black pepper 8 tolas, all rubbed together for 12 hours with lime juice and made into twelve grain pills. This medicine is said to increase appetite and cure indigestion. Bhavaprakash recommends calcined conch-shell (*Shanka bhasma*) in half-drachm doses to be taken with lime juice in enlarged spleen. In jaundice, urinary trouble and acidosis a preparation called *Krimi-dhulijalapraba Rasa* containing *Shankha bhasma*, tin, mercury and sulphur and emblic myrobalan has been recommended—(Jour. of Ayur. Oct. 1925). As a caustic, lime is used in various combinations for different diseases; *e. g* :—as an application to enlarged glands and tumours, a mixture of Conch-shell lime (*Shankha bhasma*), impure carbonate of soda (*Sarjika*) and the ashes of Raphanus Sativus is recommended by Chakradatta. A mixture of lime, carbonate of soda, sulphate of copper and borax is applied as a caustic to tumours and warts. As a *depilatory*, a paste made of Conch-shell lime 3 tolas, orpiment and the ashes of Butea frondosa one tola each rubbed together with the juice of plantain stalks or of Calotropis gigantia, is mentioned in Sharangadhara. It is applied seven times to the part from which the hair is to be removed.

16 Calcium Carbonate (*Eng.*—Chalk; marble. *Hind.*—Viiati-chuna. *Ben.*—Karimatti. *Arab.*—Kits. *Pers.*—Gil safed. *Guz.*—Chaka. *Tam.*—Sime chunnambu. *Mal.*—Kapur ingris. *Burm.*—Tounghpyu) occurs in nature as lime-stone, white marble etc. It consists of infinitesimal shells composed mostly of carbonate of lime contaminated with iron oxide, clay, organic matter etc.

and forms rocky beds. Chalk exists in plants and can be obtained by reducing them to ashes. In the animal kingdom it is found in the hard parts of Corals and in oyster shells. Thus it exists in all the three kingdoms of Nature. Carbonate of lime is an ordinary ingredient of mineral and common waters. In crystallized form it is known as calcareous spar. The crusts which envelop crabs and lobsters are made of carbonate of lime mixed with phosphate of lime. In the bones of animals they are met with in equal quantities. Chalk occurs in irregular, white, amorphous pieces, sometimes as a powder. Prepared chalk or *Creta Praeparata* is a native friable carbonate of lime freed from impurities by elutriation *i. e.*, the chalk is powdered, washed with water, decanted and allowed to subside. The sediment left is a pure carbonate of lime free from soluble salines and flinty and sandy matters. Prepared chalk or *Cretae* (*Fr.*—Craie. *Ger.*—Kreide *Hind.*—Khariya. *Ben.*—Khari) administered internally neutralises the free acid of the gastric juice; it is useful in dyspepsia due to acidity of the stomach, and to check sour eructations; in gout with excessive uric acid and in rachites with a deficiency of lime in the system. Dose is 5 to 20 grains of the powder. Prepared chalk is an antidote to poisoning by minerals. *Externally* chalk is used as a dessicant, absorbent and an antacid; useful in slight abrasions and burns, intertrigo of children, and erysipelous inflammations. For scalds which have much injured the skin application of chalk ointment is useful. Matron Crooks recommends for burns the application of a mixture of chalk and linseed or olive oil with the addition of vinegar just enough to reduce it to the

consistency of treacle or thin honey. Each renewal is said to bring "fresh relief and a most gratifying coolness"-(Health, Nov. 1925). In purulent discharges from ulcers, in combination with burnt cocoanut shell it is useful; it brings about a healthy action and lessens the discharge.

Red Chalk is a kind of earth of red colour; *Lat*—*Ferrum Haematite* (*Sans.*—Suvarna Gairika, *Ben.*—Lalgirimati. *Hind.*—Sitageru. *Eng.*—Red ochre. *Fr.*—Ocre rouge). It consists of the mixture of the hydrated sesquioxides of iron with various earthy materials principally Kaolin and Quartz. It is used as an antidote to arsenical poisoning and for dying the monk's robes. Medicinally it is said to be "sweet, astringent, cooling, antibilious, anti-phlegmatic, generative of bile, preventive of haemorrhage and beneficial in hiccup, piles, vitiated blood, poison and burns. The electuary prepared with its powder and honey instantly relieves the hiccup of children"—(N. N. Sen Gupta).

17. **Calcium Hydrate** (Slaked lime) enters into the composition of numerous compound powders used in the cure of dyspepsia. Locally it is applied to tumours and warts. Lime water is given internally in dyspepsia; it is given with milk to children in acidity of the stomach. Dose is 1 to 4 drachms, for children. Another form called the Saccharated solution of lime, better adapted for administration to infants and children, is prepared by carefully mixing together in a mortar one ounce of slaked lime and two ounces of powdered white sugar and adding this to a pint of water and shaking well and allowing it to stand for some hours.

The supernatent liquid should be kept in a well stoppered bottle. Dose is 15 to 20 drops in mi.k twice or thrice daily. The uses of lime water are many and varied:— In acidity of the stomach, in heart-burn in those forms of indigestion due to acidity of the stomach and of indigestion when the urine is scanty and high colored and when vomiting and acid eructations are prominent symptoms, lime water is best given in milk, in doses of 1½ to 2 ounces of the lime water. In diarrhoea arising from acidity it is best given in a solution of gum arabic or other mucilage; in obstinate cases 10 drops of laudanum may be added to each dose. It may also be advantageously combined with omum water. In chronic dysentery the same treatment in addition to enemas of lime water diluted with an equal part of tepid milk or mucilage has been beneficial. In the diarrhoea and vomiting of infants and young children, resulting from artificial feeding one part of lime water diluted with four to six parts of milk is suitable and the saccharated solution of lime internally is also of great service. Obstinate vomiting, vomiting attendant on the advanced stages of fever even the black vomit of yellow fever and pyrosis or waterbrash sometimes yield to a few doses of lime water in milk. In scrofula and in those cases in which abscesses and ulcers are continually forming, and also in cases of warts of children, lime water in doses of half ounce in milk three or four times a day and preserved for some time has proved beneficial to some extent. In consumption as well as in diabetes lime water and milk has been strongly recommended as an ordinary beverage. In poisoning

by any mineral acids, lime water given plentifully in milk is an antidote; it may also be given in poisoning by arsenic. *Externally*, in pruritus ani and pu iendi (distressing irritation of the genital organs), bathing the parts well with tepid lime water three or four times a day affords much relief. Leucorrhoea and other vaginal discharges have in some instances been mitigated and even cured by the use of injections of a mixture of 1 part of lime water to 2 or 3 parts of water. Scrofulous and other ulcers with much discharge have been found to improve under the use of lime water as a local application. For syphilitic ulcers or chancres one of the best applications is a mixture of lime water half a pint and calomel 30 grains (commonly known as Black Wash); it is constantly applied to the part by means of a piece of lint or clean rag moistened with it. Many forms of skin diseases attended with much secretion and with great irritation or burning, and sore or cracked nipples are benefited by lime water either pure or conjoined with oil. Diluted with equal parts of water or milk it forms a useful injection in discharges from the nose and ears occuring in scrofulous and other children. In thread worms enemas of 3 or 4 ounces of lime water repeated two or three times have sometimes effected a cure. To burns and scalds lime liniment called Carron oil, composed of equal parts of lime water and a bland oil (olive oil or sasamum oil, perferably linseed oil) thoroughly shaken well together so as to form a uniform mixture is a popular remedy; the parts scalded should be kept covered with rags constantly wetted with the liniment. This liniment on cotton wool applied to the pustules of small pox is said to prevent pitting.

18. Calcium Oxide or **Calx** (*Sans.*—Sudha; Shudhakshara. *Eng.*—Burnt lime; quicklime; caustic lime. *Hind.* & *Ben.*—Kali-ka-chuna. *Arab.*—Kilo; Apag. *Pers.*—Ahaka nurch. *Punj.* & *Cash.*—Chuna; Chun. *Guz.*—Kalichuno. *Mah.* & *Kon.*—Chunno. *Can.*—Sunna. *Tam.*—Chunnambu. *Tel.*—Sunnam. *Mal.*—Nura. *Burm.*—H' tonphia. *Cing.*—Hunnoo. *Malay.*—Kapor) is an alkaline earth occuring in both the mineral and vegetable kingdoms. In the mineral kingdom it is found combined in the form of carbonate, sulphate, phosphate, silicate and biborate of lime. Flour-spar is a combination of lime with fluorine etc. In the vegetable kingdom it is found in combination with vegetable acids. It is obtained by calcination or by burning chalk, marble or lime stone with coal or coke in a wind furnace known as kiln. It exists in light lumps of dirty white colour; it slakes rapidly if water is poured upon it, leaving a white, bulky powder. It is of a pungent, acid and caustic taste and slightly soluble in water. It is called slaked lime (*Calcium hydrate*) and the water above is lime water. Slaked lime, the residue left after removing lime water is a soft white powder of a strong alkaline taste and reaction. Lime water is obtained by pouring water on recently burnt lime, or when vapour ceases to be disengaged set it aside to cool. It is also obtained by adding water to slaked lime and shaking well for a few minutes and allowing it to settle down for about twelve hours. The supernatent liquor is lime water. Quick lime shell or unslaked lime is used as a caustic. Quick-lime mixed with gamboge is applied to painful and gouty joints. A *paste* made o

quick lime and pearl ash equal parts is a useful application to remove warts. Mixed with sulphuret of arsenic it is used as a cure for indolent ulcers. In ringworm or Dhobie's itch an application made of quick lime 1 ounce and precipitated sulphur 2 ounces boiled in 15 ounces of water until reduced to 10 ounces and then the water decanted is used every night for three or four days for a cure. As a depilatory quicklime is used by tanners to remove hairs from hides. In combination with sulphuret of sodium, sulphuret of barium or sulphuret of arsenic in the proportion of 3 to 1 it is used to remove superfluous hair. For this purpose a *paste* made of quicklime 4 parts, yellow orpiment 2 parts, seeds of Butea frondosa 2 anc Calotropis gigentea 3 parts is in general use. It is also useful to destroy noevi and is a useful caustic application on the bites of rabid dogs. In neuralgic headache, applied to the part, it gives relief ; applied to relieve painful and gouty joints. For this purpose a paste made of quick lime 2 parts and the gum resin of Garcinia Morella 3 parts is used.

19. Calcium Sulphate (*Sans.*—Sanjirahat. *Eng.*—Alabaster ; Gypsum. *Sind.*—Karicheri. *Pers.*—Sangmakrani. *Hind.*—Sufed Pathar. *Guz.*—Gabhana. *Mah.*—Godanti ; Haratala), in primitive form occurs generally in long, flat, dirty-white, transparent scales, crystals or regular four-sided prisms. For medicinal purposes it is prepared by overburning and then grinding the ashes and is then known as ***Plaster of Paris*** or carbonate of lime. ***Plaster of Paris*** is used to retain broken bones in a fixed position. In fracture of the limbs and ribs and in diseases of the spine it is useful. Carbonate

of lime-ash is well rubbed in curd and then locally applied to painful and swollen parts or to the chest with relief. Internally it is an astringent and antacid and is useful in menorrhagia and acidity of the stomach. In inflammation round the ear, a paste made of Carbonate of lime 5, alum 5 and *Gile armani* (Silicate of alumina, magnesia and oxide of iron) 4 parts is applied outside the ear; in otorrhoea it may be dropped into the ear.

20. **Carbo ligni** (*Eng.*—Wood charcoal. *Hind*—Lakrika-koyelah. *Duk*—Lakrika kolsa. *Ben.*—Kash-tha-koyala. *Mah.*—Lakdacha kolsa. *Guz.*—Lakdu-koelo *Punj.*—Koilah. *Cash*—Tsuing. *Tam.*—Aduppu-kari. *Tel.*—Katta-boggu. *Mal*—Muttikari. *Can.*—Kattige-iddalu. *Burm.*—Then-muswe. *Cing.*—Anguru. *Malay.*—Ahrang) is an important article from the sanitary and medical as well as economical point of view. It is used as a deodoriser in sickrooms by hanging thin muslin bags loosely filled with roughly *powdered charcoal*; the charcoal requires to be renewed occasionally. Water is purified by boiling it with a good-sized piece of freshly prepared charcoal. Charcoal is used in respirators and sewer traps to protect from poisonous gases. It also forms an excellent filter placed in alternate layers with river sand. Finely powdered charcoal mixed with fine powder of the Areca or Betel nut forms an excellent toothpowder. Charcoal poultice made by adding finely powdered charcoal to a common rice poultice in the proportion of one part of the former to three or four of the latter, with a little charcoal powder also sprinkled over the surface of the poultice is an esteemed application to foul ulcers and wounds. An efficient charcoal

poultice is made up of 2 ounces of bread crumb boiled in 10 ounces of water for 10 minutes then 1½ ounces of linseed meal or rice flour added and the whole stirred to form a poultice to which ¼ ounce of wood charcoal is finally added, and a like quantity of dry charcoal is sprinkled over the surface of the poultice. It corrects bad odour and stimulates healthy action. *Internally* a mixture of charcoal and rhubarb powder 5 grains each is given after food in dyspepsia with benefit; also in flatulence and acidity of the stomach and intestinal tract; also in diarrhoea, dysentery and typhoid fever charcoal powder is used internally as antiseptic and stimulant, in biscuit or capsules. The most palatable way is to mix it with chocolate. Dose is 1 to 2 drachms. The charcoal of Butea frondosa has the property of decolorizing like animal charcoal. Dry charcoal has the power of condensing oxygen within its pores which then becomes a powerful oxidiser rapidly destroying organic substances. When thoroughly wetted it loses this power.

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21. CUPRUM.

Sans.—Tamra; Shulva; Ravi; Mlechha-muka. *Eng.*—Copper. *Arab.*—Nehass. *Fr.*—Cuivre. *Ger.*—Kupfer. *Pers.*—Misa. *Hind.*—Tamba. *Ben.*—Tama. *Assam.*—Tam. *Guz.*—Trambo. *Mah. & Kon.*—Tambe. *Tam.*—Shembu. *Tel.*—Tamberam; Ragi. *Can.*—Tambra. *Mal.*—Tambaga. *Burm.*—Kyani.

Source.—Found extensively free in the metallic state and also in various combinations as sulphide in copper pyrites and as carbonate, phosphate, and arsenate; with oxygen as cuprous or red oxide and as cupric or black oxide. Copper ore is found in the

districts of Singbhum and Hazaribag (Bengal). In minute quantities it is found in natural springs and in the animal and vegetable organisms.

Characters.—A brilliant, sonorous, ductile metal of a reddish colour; impure copper is black; when mixed with impurities it breaks on being hammered. Copper is a good conductor of heat and electricity. Its chief solvent is nitric acid. Its most important alloys are four.—(1) Brass (*Sans.* & *Vern.*—Pittal. *Pers.*—Biring. *Tel.*—Atdi. *Can.*—Hittali) which contains 35 p. c. of zinc. After purified and reduced it is said to be "saltish, bitter, cool and beneficial in jaundice, worms and spleen."—(N. N. Sen Gupta). Calx of this compound metal is used as tonic and alterative. A preparation called "*Pittal Bhasma*" is advertised as astringent, expectorant and diuretic useful in bleeding piles, anaemia, colic, asthma and other lung complaints. Dose is 2 to 4 grains with milk; (2) Bronze (*Sans.*—Kansa. *Pers.*—Roeen; Taliqun) contains 12 p. c. of tin, also a little zinc and lead; (3) Bell metal (*Sans.*—Kansa. *Pers.*—Tualiqun. *Hind* & *Ben.*—Kansa. *Guz.*—Kanso. *Mah.* & *Kon.*—Kanshe. *Tel* & *Can.*—Kanchu) contains 25 p. c. of tin; (4) German Silver, an alloy of copper, zinc and nickel. Bell metal and Brass are sometimes used in combination with other metals as for example, in the preparation called "Nityananda Rasa." They are regarded as tonic and alterative. They are purified and reduced to powder in the same way as copper.

Preparations—Thin plates of copper which can be pierced by a pin are purified by being boiled in

cow's urine for three hours; then reduced to powder by smearing the thin leaves with a paste of sulphur and lemon juice and beating them into a mass and exposing to heat in a covered crucible within a sand-bath for 12 hours. The powder thus produced is rubbed with *Kanjika* (fermented rice or paddy liquor) and made into a ball which is introduced into a tuber of Amorphophallus Campanulatus (*Sooran*) as in a crucible and roasted. When cool take out the ball and powder; the sulphide of copper thus produced is innocuous; this last process is called *Amritakarana* which makes copper fit for internal use, freeing it from its toxic effects of causing purging, vomiting, vertigo etc. The copper powder (*Tamra Bhasma*) is a dark-black powder, somewhat gritty to the feel. Another method of preparing Copper *Bhasma* is by rubbing together mercury ½ and sulphur 2 parts in the juice of Calotropis gigentia and adding old copper coins (which are supposed to be of purer copper than new ones) and submitting the whole to processes of oxidation and calcination as in the preparation of gold or silver *bhasma*. Dose is ½ to 1 grain. As alterative the dose is 2 to 4 grains. As emetic in cases of poisoning the dose is 24 grains with sugar or honey.

Action.—Astringent, sedative, antispasmodic, alterative, antiseptic, emetic and purgative. In small doses it is astringent; in large doses it is alterative and in very large doses it is emetic. Copper is absorbed from the stomach, intestines and mucous membranes probably as a colloid and stored up in the liver, small amounts being found also in the spleen and kidneys. It is excreted by

the liver, kidneys and the salivary and intestinal glands. Colloidal copper increases activity of cell-metabolism—(Dr. Gers, Med. Press 1910.)

Uses.—Copper enters into the composition of several medicines for ague, remittent and relapsing fevers heart disease, skin diseases, phthisis, enlarged spleen etc. Copper is used in combination with aconite and the juice of *dhatura* leaves, in epilepsy, gout and rheumatism ; also in chronic skin diseases, leprosy, asthma, chronic diarrhoea and gonorrhoea. As antiseptic copper salts are good in diarrhoea and bacterial infections *e. g.* Bacilli Coli. Owing to its antiseptic qualities ancient Hindus preserved water in bright copper vessels (*Tamrapatra*). *Externally Tamra-bhasma* is recommended in Ayurveda for local application in piles, leprosy, skin-diseases, and ozoena. Modern researches have shown colloidal copper to be useful in cancer. It is said to diminish pain and produce marked improvement. Internally prepared copper in small doses (gr. 1 to 2) is considered valuable for chronic diarrhoea and sprue—even cholera. Copper is highly poisonous to lower forms of plant life, but not so on the higher forms of either plant or animal life. Copper has been used "in all forms of cholera and diarrhoea with uniform success and satisfaction. Its greatest usefulness is in the prevention of all these diseases, the most important of which is typhoid fever"—(C. Wifekoff Cummins in Jour. of Med. Soc of N. J., June 1912). The effect of 1/24 grain of copper sulpho-carbolate on choleraic diseases is marvellous; all of the serious symptoms abate in a few hours. When using the copper nothing is used to control the diarrhoea directly unless it seems to

be too debilitating. Then a little camphorated tincture of opium is added and perhaps some cinnamon". In flatulent swelling of intestines and Tabes Mesenterica (*Gulma*), prepared copper in two-grain doses rubbed with ginger juice and enclosed in betel leaf is useful—(Rasendrasara Sangraha). A compound preparation known as *Gulma Kalanala Rasa* is recommended in this disease; it is given in doses of 8 grains on empty stomach mixed with honey and a decoction of chebulic myrobalans. As antiseptic prepared copper is useful in small intestinal worms—(Raj nirghantu); it may be tried in hookworm. The same recommends it in acid dyspepsia as an alterative, sedative and antiseptic. Prepared copper in small doses is useful in bronchitis as an expectorant and also probably for its effect on the bronchial nerves. This (*Tamra bhasma*) "was tried given with honey in a few cases of asthma and bronchitis and found to give relief in those cases"—(Ind. Drugs Report, Madras). As an emetic in large doses it is useful to expel excessive mucous from respiratory tract; also in asthmatic fits caused by the Vagus reflex. For this Sharangadhara recommends a preparation of copper named *Suryavartta Rasa*. In phthisis also it is recommended. In this disease Nirghantu Ratnakar recommends a preparation called *Tamraparpati* in ½ to 2 grain doses. In modern times Luton has reported favourably on the use of copper in tuberculosis.—(Prov. Med., Dec. 1912). *Jalodarari Rasa* containing copper and 1/3 grain of croton seed with other ingredients in each pill is recommended in ascites and dropsy.

In case of acute poisoning from use of unprepared Copper

(no case of poisoning from the "rectified" copper preparations of Ayurvedic Pharmacopoeia is known to have occurred) with violent gastro-intestinal symptoms, potassium ferro-cyanide should be given at once followed by demulcents such as milk and ghee or infusion of *Isaphgol*. To relieve pain apply counter-irritant over abdomen and give opium. For chronic poisoning produced by taking small quantities for a long time, with symptoms of gastro-intestinal irritation, pharyngeal and laryngeal catarrh, anaemia and wasting, profuse perspiration and nervous symptoms,—Saline purgatives for daily evacuation, large quantities of milk and ghee and freshly made infusion of *Isaphgol* are to be given.

22. Copper Sulphate (*Sans.*—Sasyaka; Tuttha. *Eng*—Verdigris; Blue vitriol; blue stone. *Ben*—Tutia. *Hind.* & *Punj.*—Nila-thotha. *Guz.* & *Duk.*—Mor-tutta. *Malay.*—Toorshi. *Burm.*—Doutha. *Tam.*—Tuttam turichi. *Tel. Can.* & *Kon.*—Mayil tuttu. *Cing.*—Palmanikam) is prepared by roasting copper pyrites with sulphur, dissolving the roasted mass in water and evaporating the solution to obtain the dark-blue crystals of the sulphate. Copper sulphate is purified for internal use by being rubbed with honey and ghee and exposed to heat in a crucible; it is then soaked for three days in whey and dried. Copper sulphate thus prepared is said to be free from toxic effects and not to produce vomiting. Its incompatibles are alkalies, lime water, mineral salts (except sulphates) and most vegetable astringents. In action it is a powerful astringent, emetic and antiseptic; externally stimulant, styptic and milk caustic. Dose,

as an astringent is $\frac{1}{8}$ to 2 grains; as an emetic it is 5 grains, used in cases of poisoning by narcotics. In diarrhoea and dysentery, and in the diarrhoea of the advanced stages of phthisis, copper sulphate and opium $\frac{1}{2}$ grain of each in pill form, mixed with honey is given thrice daily. It is contained in medicines named *Grahanikapata Rasa* which is useful in bowel diseases such as chronic diarrhoea and dysentery and especially sprue; in *Garbhabilasa Rasa* or *Sutikabindu* (Rasendrasarasangraha) which are recommended for puerperal diseases as puerperal diarrhoea, and indigestion during pregnancy; in *Jayamangala Rasa*, *Mahamrityunjaya Lauha*, *Putapakwavisamajwarantaka Lauha*, *Jvarankusha* (Bhavaprakash) and *Chaturthakari* (Bhaisajyatantra) which are used in intermittent and relapsing fevers with enlarged spleen and liver. In cases of diarrhoea in children a mixture made of copper sulphate $2\frac{1}{2}$ grains, *Ajowan* water 2 ounces is useful in doses of a teaspoonful thrice daily. In cases of diphtheria and croup in children a solution of copper sulphate (5 grains to an ounce of water) in teaspoonful doses every $\frac{1}{2}$ hour till vomiting is produced is useful. In cases of poisoning copper sulphate 4 grains dissolved in hot water is given every few minutes till vomiting occurs. *Externally* copper sulphate is applied to sinuses and fistula-in-ano in solid or preferably liquid form as solution (2 grains gradually increased to 10 in an ounce of water). For foul and obstinate indolent ulcers Chakradatta recommends an ointment of copper. An ointment known as Oleatum Cupri (B. P.) is highly recommended in parasitic diseases of the skin, in ring-

worm, indolent ulcers etc. In prickly heat a solution of copper sulphate in rose water (1 in 50) often gives relief. In ringworm an ointment made of copper sulphate 10 grains, powdered galls 1 dr. and an ounce of ceromel, rubbed on the affected parts, though it smarts, is very effective. In eye diseases, Chakradatta recommends a weak solution of Copper sulphate (1 in 500) to be dropped into the eye in opacity of the cornea. A half per cent solution (copper sulphate 2 grains, alum 2 grains and water one ounce) may be used in conjunctivitis and ophthalmia with copious discharge. In haemorrhage from the nose, solution of copper sulphate, 4 grains to 1 ounce of water, is effective as a nasal douche even when alum fails. If there is excessive bleeding from wounds due, to leech-bite application of a little powdered copper sulphate is useful when alum fails. In leucorrhoea and gonorrhoea it may be used as an astringent and antiseptic vaginal or urethral injection. In ulceration of the mouth copper sulphate 2 grains in a little honey may be applied to the ulcers. In cases of poisoning by opium *dhatura*, nux-vomica, Cocculus Indicus, aconite, arsenic etc., (where immediate emptying of the stomach is necessary and not in other cases) copper sulphate solution (5 grains in a pint of tepid water) given at a draught acts promptly as a good emetic; this may be repeated a second or third time *if necessary*. Vomiting is promoted by copious draughts of warm water. If the sulphate causes any unplesant effects the white of egg is the best remedy. In cases of burns from phosphorus, cotton pads soaked in 1 per cent solution of copper

sulphate are useful; this immediately coats the phosphorus with a black layer and renders it inert."—(Dr. D. C. Walton— J. Amer. Med. Assoc). For spongy gums Aksir-ul-Imraj recommends an application made of Copper sulphate, alum, pellitory root, black pepper, each 2 *mashas* and honey 1 tola; it is to be applied to the gums.

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23. FERRUM.

Sans.—Lauha; Hyam. *Eng.*—Iron; iron wire. *Arab.*—Hadida. *Pers.*—Ahana. *Urdu.*—Lohchun. *Hind. Ben.* & *Duk.*—Loha. *Guz.*—Lodhun. *Mah.* & *Kon.*—Lokhand. *Can.*—Kabbina. *Tam.*—Irimbu. *Tel.*—Inumu. *Cing.*—Yekada. *Burm.*—Than. *Malay.*—Basi.

Source—Rarely met with free in nature, though very widely distributed in both the organic and the inorganic kingdoms. Found in nearly all rocks, soils etc., variously combined with oxygen as haematite, magnetic iron ore etc., with sulphur as iron-pyrites, and as carbonate of iron, in spathic iron; in the ashes of plants and even the blood (red corpuscles of the blood) of animals; also in the bile, chyle, gastric juice, lymph, milk, pigment of the eye and in the urine.

Classification.—According to Rasaratna Samuchhaya there are three varieties of iron,—(1) Cast iron (*Mundam*)—which is again subdivided into three varieties.—(*a*) *Mridu* is that variety of iron which easily melts, does not break and is glossy; (*b*) *Kuntham*, that which expands with difficulty when struck with a hammer, and (*c*) *Kadaram*, that which breaks when struck with a hammer and has a black fracture. (2) Steel (*Tikshnam*)—

which is again of six varieties.—(*a*) *Khara*—Rough, free from hair-like lines and on breaking shows the lustre of quicksilver and breaks easily by bending; (*b*) *Sara*—the variety which breaks in the sides by hammering; it has hair-like lines and is a product of brown soil; (*c*) *Hrinnala*—it is black in colour, shows seed or beak-like lines and is very difficult to cut; (*d*) *Bajir Lauha*—it is of sky colour and shows thin lines; (*e*) *Tarabatta*—not described; (*f*) *Kala* or *Kalayasa*—blue-black colour, brilliant, plain, heavy and does not break even by striking with an iron hammer. (3) Wrought iron (*Kantam*); its characters—"It possesses one, two, three, four or five faces and often many more faces (with which to attract iron and is of yellow, black and red colour respectively. It is also subdivided into five varieties:—(*a*) *Bhramaka*—"that variety which makes all kinds of iron move about"; (*b*) *Chumbaka*—"that which kisses any other piece of iron"; (*c*) *Karshaka*—"that which attracts another piece of iron"; (*d*) *Dravaka*—"that which can at once melt other sorts of iron and (*e*) *Romakanta*—"that which when broken, shoots forth hair-like filaments". Of all varieties described above *Bhramaka* and *Chumbaka* are well suited in curing diseases; *Karshaka* and *Dravaka* in *Rasayana* for rebuilding of the lost tissues of the system. *Romakanta* is best suited in binding or treating mercury. *Kanta Lauha* is recommended for use in preparation of medicines.

Purification.—Iron is purified by the following methods.—(1) It is first of all beaten into thin plates, which are then heated in fire and when red-hot, plunged into the following liquids one at a time:—oil, whey, *conjee*, cow's urine and a decoction of Dolichos

uniflorus. This is repeated three times in succession. (2) To get rid of impurities, boil one and half seer of water, reducing to quarter and then soaking in it half a seer of thin plates of cast iron which have been previously heated. Repeat the process seven times.

Characters of Prepared Iron (Oxides of Iron):—It is a fine impalpable powder of a dark reddish brown colour which floats on water.

Preparation of Lauha Bhasma:—The most easy method of reduction of iron is by soaking it for seven successive days in the juice of pomegranate or Jam leaves and drying it in the sun. Then the iron is roasted (by *putas*) as usual. By this method only 6 to 10 *putas* are sufficient for efficient reduction of iron:—Dose is 6 to 12 grains.

Action.—Iron improves the quality of blood. Iron produces constipation and this is why it was recommended to be administered with *Triphala* powder. Iron stimulates the functional activity of all the organs of the body and is therefore a valuable general tonic. *Lauha Bhasma* is a powerful alterative, astringent, tonic and restorative.

Uses.—Iron and its preparations are generally given with certain selected vehicles. In consumption it is given with black pepper and long pepper. In hectic fever *Lauha Bhasma* is given with honey and dry ginger. In gonorrhoea it is given with *guggula*. As a haematinic tonic prepared iron is used in many diseases:—Anaemia and chlorosis :—Iron is of great value in both simple and secondary anaemias. The benefit is specially marked in cases of chlorosis and in anaemia caused by malaria, kala-azar, chronic discharges or repeated passive haemorrhage. Among the various preparations *Navayasa Lauha* is very

useful and is very commonly used in all forms of anaemia; it is prepared thus:—Take of prepared iron 9 parts, ginger, long pepper, black pepper, tuber of Cyperus rotundus, Plumbago root, each 1 part; powder and mix. Dose in 4 grains with honey. The dose is increased gradually every second day by 2 grains till the maximum dose of 16 grains is reached—(Chakradatta). *Guduchyadi Lauha* is a similar preparation with the only difference that it contains also *Gulancha*. *Lohasava* is another similar preparation containing, besides the above drugs, *triphala, ajwan* and *vavading*. It is useful in anaemic dropsy and diseases of the spleen. Dose is ½ to 2 tolas. In secondary anaemia from chronic intermittent fever, iron is very useful adjuvant to anti-pyretic drugs. *Vrihat Sarva-Jvara-hara-Lauha*, *Visama Jwarantaka-Lauha* and *Jaya Mangala Rasa* are well known preparations containing iron and are commonly used. In haemorrhagic diseases such as haemoptysis, haematuria, bleeding from piles, etc., iron is commonly given with good results. In leucorrhoea leading to anaemia preparations containing iron are useful. Iron is a valuable remedy in Bright's disease and not only cures the anaemia but also lessens the albumin. It is usually prescribed with *Yavakshara*, for which *Tryushanadi Lauha* recommended in Rasendrasara Sangraha is used. It contains:—Iron 4 parts, *Yavakshara*, ginger, long pepper & black pepper each 1 part, made into 6 grain pills with water. It is useful also in chronic dyspepsia with anaemia scrofula and tuberculosis and in anæmia due to intestinal worms. Iron is of great value when given internally in some skin diseases, *i. e.*, erysipelas, carbuncles and faruncolosis. The

use of iron with vegetables containing tannic acid, produces tannate of iron which is insoluble in water and it is a very strong illustration of chemical incompatibility, But, Dr. H.C. Sen says "recent investigations have shown that iron in its mineral state is not absorbed. The only way in which it enters the system is as vegetable or mineral compound. Large quantities of iron do produce effect on anæmia. This is due to the power of iron to educate the cells to take iron from vegetables and animals. Iron is not absorbed in any other way. We have about 46 grains of iron in our system. If it were not for this fact, say 3 doses of ferri carbonas saccharatus ought to have cured every case of anaemia. We know, however, that this is far from being true. The iron goes out with the faecal matter as sulphide. The gradual effect of iron in anaemia is due to its teaching the intestinal and other cells to do their duty of selection more carefully. What is true of iron, is true of many other things." A light diet of fine rice etc., should be adopted, and all indigestible food should be avoided during the use of this medicine. A preparation called *Chandanadya Lauha* is recommended in Rasendrasarasangraha for all sorts of chronic intermittent fever and fever with enlarged spleen; it contains iron, together with a number of vegetable drugs, all rubbed together. Dose is ten grains to be taken with the fresh juice of Tinospora Cordifolia and Hedyotis biflora. *Rasayanamrita Leha* is a confection containing prepared iron and a number of vegetable medicines and rock salt prepared with the aid of lemon juice, decoction of the myrobalans, sugar and ghee is useful in enlargement of abdominal viscera, anaemia, jaundice and chronic fever.

Dose is 1 to 2 tolas. *Visamajvarantaka Lauha* is also useful in such cases. It is prepared out of sublimed mercury and sulphur, prepared gold, prepared iron, copper and talc, prepared tin, red ochre and corals, roasted pearls, conchshell and bivalve shell, all beaten together into a mass with the aid of water, and the mass then enclosed within bivalve shells covered with a layer of clay and roasted lightly in fire burning with cowdung cakes. Dose of this is four grains given with the addition of long pepper, rock salt and assafoetida each 4 grains and a little honey, daily in the mornings. Several preparations of iron are used in piles such as *Mana Suranadya Lauha, Arsari Lauha, Agnimukha Lauha* etc. *Mana Suranadya Lauha* is prepared thus:—Take of the root-stocks of Colocasia Indica and Amorphophallus campanulatus, of the roots of Ipomoea turpethum and Baliospermum montanum, marking nuts, the three myrobalans, black pepper, long pepper, ginger, seeds of Embelia ribes, root of Plumbago zeylanica and the tubers of Cyperus rotundus, equal parts, prepared iron in quantity equal to all the above ingredients. Powder and mix. Dose about a scruple. This medicine is said to be useful in piles with constipation. For haemorrhagic diseases *Kandakadya lauha, Sudhanidhi rasa, Amalakadya lauha* etc., are recommended. The last is prepared thus:—Take of emblic myrobalan and long pepper each 1 part, sugar 2 parts, prepared iron 4 parts, powder and mix them together. Dose is 6 to 12 grains in haemoptysis, haematuria etc., with suitable adjuncts—(Rasendrasarasangraha). In anaemia and dyspepsia with anorexia an organic compound of iron called *Kalpam* made of iron powder,

pepper, garlic and limes, was tried and "found very beneficial in improving the blood, strengthening the patient and also in creating an appetite"—(Ind. Drugs Report, Madras). In dropsy due to anaemia, Bright's disease and heart affections, *Shoathahar Loha* the chief ingredients of which are *trikatu*, *Yavakshara* and *Loha bhasma* (Calcined iron) is recommended in doses of 1 to 4 pills of 6 grains each three times a day after food. For chronic dyspepsia giving pain after digestion, and for chronic fever, diarrhoea, phthisis etc., Bhavaprakasha gives a *confection* containing *vavading*, *mustaka*, *triphala*, *trikatu*, *gulancha*, *danti*, *trivrit*, *chitraka*. prepared iron, old iron rust, prepared talc, purified mercury and sulphur. Dose is 10 to 30 grains with milk or cold water. For anaemia, jaundice and dyspepsia a preparation called *Dhatri leha* made of prepared iron 32 tolas, emblic myrobalan 64 tolas and liquorice root 16 tolas, all powdered and soaked into *Gulancha* root-juice seven times successively is used. Dose is 20 to 40 grains. In asthma with constipation due to *Vayu-pitta*, iron is used in the form of *Mahasvasari lauha* and *Pippuladi lauha* which are similar in composition *viz*:—prepared iron, prepared talc, *triphala*, liquorice root, raisins, long pepper, kernel of jujube fruits, bamboo-manna, *talispatra*, *baberang* seeds, cardamoms, root of Aplotaxis auriculata, flowers of Mesua ferrea, honey and sugar. Dose is 20 grains taken with honey two or three times a day. In enlarged spleen *Rohitaka lauha* is the favourite form in which iron is used In enlarged liver, spleen, jaundice etc, *Yakridari lauha* mentioned in Rasendrasarasangraha is used; it is made of prepared iron, talc and copper 4 tolas each, root of Citrus

Bergamia and burnt deer-skin 8 tolas each, rubbed together with water to make a pill-mass. Dose is 9 to 18 grains. In anasarca it recommends *Tryushanadi lauha* already mentioned in connection with Bright's disease. It gives also a number of iron preparations for various kinds of diseases; *e. g.*, erysipelas, carbuncles and boils a pill called *Kalagnirudra rasa* is recommended. It contains mercury, sulphur, prepared talc, iron, iron rust and iron pyrites each 1 part rubbed together with water and the mixture roasted within a covered crucible, and when cool, one-tenth part of its weight of aconite is added, mixed intimately and the mass divided into 22 grain pills. For chronic fever, anaemia, jaundice etc., and urinary diseases as gonorrhoea, strangury etc., a preparation called *Mehamudgara rasa* is recommended. It contains prepared iron, black salt, *triphala*, *trikatu* and a number of other vegetable substances, beaten into a uniform mass with ghee. Dose is 22 grains with water or goat's milk. In diabetes and other urinary diseases, female complaints etc., pills called *Vrihat Somanatha rasa* are recommended to be administered with honey. It contains prepared iron, talc, tin, silver, calamine, iron pyrites, sublimed and purified mercury and gold. Dose is 4 grains. For diabetes Hakeem Ajmal Khan Saheb of Delhi prescribes 1 grain of reduced emerald and ½ grain of reduced iron, mixed and made into one dose to be used with a *Majoon* (confection) suited to the disease—(Hakeem & Vaidyan). A preparation similar in composition to the above and called *Somesvara rasa* is given in leucorrhoea and other female complaints. In "worm affecting the

liver and causing jaundice and in blood parasites with constipation and ulceration in eye and throat" a preparation called *Krimi-kalanal Rasa*, containing iron, mercury and sulphur, aconite and *Vidanga*, is recommended and for "blood parasite causing jaundice or dysentery another preparation named *Krimirogari Rasa* containing iron, mercury and sulphur, lead, aconite, Cyperus rotundus, *triphala*, *trikatu*, Cissempelos pareira, Pavonia odorata, Aegle marmelos, Woodfordia floribunda and juice of Verbesina calendulaceae, is recommended—(Dr. Ashutosh Roy—Jour. of Ayur., Oct. 1925.) Another haematinic vermifuge mentioned by the same and called, *Vidanga Lauha* containing *vidanga*, iron, mercury and sulphur, arsenic, black pepper, nutmeg, cloves, ginger and borax is said to be good in worms and blood parasites with chronic fever and other troubles of gastro-intestinal tract.

Besides the preparations mentioned above numerous other combinations of mercury, iron and talc with the addition of gold, silver, copper etc., in varying proportions and combinations are described under different names. In fact mercury, iron and talc constitute the basis of the great majority of the pills used by *Kavirajas*. Iron forms an ingredient of hair dyes, *e. g.*—a *paste* made of powdered iron, chebulic and emblic myrobalans 2 tolas each, mango stones 5 tolas and belleric myrobalan 1 tola rubbed together with water in an iron vessel and steeped for one night. This paste is applied to grey hairs for turning them into black—(Bhavapraasha).

24. Ferro-Ferric Oxide or Ferri Peroxidum Rubrum (*Sans.*—Manduram. *Eng.*—Ironrust; impure

oxide of iron. *Arab.*—Khabsul Hadid. *Pers.*—Zing-e-ahana. *Bom.*—Loheka janga. *Hind.*—Lohaka Zang. *Ben.*—Lohar-gu. *Duk.*—Lohaka-gu; Mandur. *Guz.*—Lodhano kata. *Tel.*—Innupa chittumu. *Tam.*—Irumboo Chittam. *Mal.*—Irambak kitane. *Can.*—Kabbinada kilubu or kitta. *Cing.*—Yakada kittam. *Kon.*—Lokhanda-gu. *Burm.*—Sanpia; Tambia) is prepared iron rust consisting of small particles of iron or forge scales scattered round the blacksmith's anvil, when hot iron is beaten on it; these by exposure to air become rusty and brittle; then they are considered fit for use. They are then roasted again and powdered very finely. *Mandura* is thus purified and prepared for use like cast iron. The properties of *Mandura* are said to be similar to those of cast iron. "The qualities which reside in killed iron are also to be found in the rust of iron; hence the latter may be substituted for the treatment of diseases" — (Rasaratna Samucchaya). Dose is 2 to 6 grains. *Mandura* is specially useful in anaemia, amenorrhoea, dysmenorrhoea, menorrhagia, chlorosis etc; also diarrhoea, chronic bowel complaints, dyspepsia, intestinal worms and nervous diseases; neuralgia of the 5th nerve due to debility kidney diseases, albuminuria etc. The most important conditions under which the use of *Mandura* should be avoided are feverishness produced either by chronic diseases or by local irritation as in dyspepsia attended with constipation. *Guda Mandura* is a favourite medicine for dyspepsia with pain after taking food. It is made thus:—Take of iron rust 3 parts, emblic and chebulic myrobalans, and old treacle each 1 part. These are rubbed together with honey and ghee and made into

boluses; to be taken in divided doses before, along with and after meals—(Bhavaprakash). *Mandura Loha*, the chief ingredients of which are *trikatu*, *chitraka*, *vidanga*, *makshika bhasma* and *mandura bhasma* is used in asthma, general debility, sexual debility, intermittent fever with enlargement of spleen and heart disease. Dose is 1 to 4 pills of two grains each twice a day after food. For dyspepsia, congested liver etc, a powder composed of *Mandura* and *panchalavana* (the five salts) 5 parts each and *Amla* 4 parts is useful. Dose is 10 grains. To women with scanty menstruation *Mandura* is given in combination with aloes and other stimulants. The following are a few useful home remedies containing *Mandura*:—(1) Take of *Mandura* 4 parts, Oxalis corniculata, Piper longum, each 1 part, and sugar 2 parts. Mix and powder. Dose is 10 grains; used in haemoptysis and haematuria. (2) Take of *Mandura* 5, Cinnabar 1, *Trikatu* 5, Cloves 2, Arillus of nutmeg 3 parts. Mix and powder. Dose is 5 grains; used as an alterative tonic in the pregnant state. (3) Take of *Mandura* 4, Impure carbonate of potash 3, and *Trikatu* 1 part. Dose is 3 grains; used in anasarca. Externally an oil made of sweet oil 4 parts, *Mandura*, *triphala* and Indian sarsaparilla 1 part each and the juice of *Bhangra* 15 parts is used with much benefit in alopæcia.

25. **Ferri Sulphas** (*Sans.*—Kasisa. *Eng.*—Green Vitriol; Green Copperas; Iron sulphate. *Fr.*—Sulphate ferreux. *Ger.*—Schwefelsaures Eisenoxydul. *Ben. Can.* & *Kon.*—Hira kasa. *Arab.*—Zaje-Asfara. *Pers.*—Zankurmadni; Tutiya-saba. *Hind.*—Hara-Tutia. *Guz.*—Hara-kasis; Kashis. *Punj* & *Cash.*—Sang-i-sabz.

Can. *Tam.* & *Mal.*—Annabhedi. *Malay.*—Madukalpa. *Tel.*—Tagramu) was divided into two varieties by the ancient Hindu chemists.—(1) *Valuka-kasisa* or *Dhatu-kasisa*, the green variety (ferrous sulphate); (2) *Pushpa-kasisa*, the yellowish variety which is probably iron sulphate covered with the basic sulphate of the sesquioxide from absorption of oxygen—(Rasaratnasamuchhaya). It is a salt usually obtained by the decomposition of iron-pyrites by the action of atmospheric moisture. It can be obtained also by dissolving iron wires in sulphuric acid by the aid of heat. It occurs in pale bluish-green oblique rhombic prisms; taste is very astringent or styptic and without any odour; acid reaction; soluble in water, insoluble in alcohol. It is a valuable haematinic, tonic and astringent. It is apt to irritate the stomach. Preparations made of it are generally *Bhasma*, oil and solution. *Bhasma* is prepared by taking equal quantities of iron-sulphate and sulphur, reducing them to fine powder, mixing and roasting the mixture or mass. To this is added *triphala* (the three myrobalans), black pepper, honey and ghee and the whole is triturated. Dose is $\frac{1}{4}$ to 2 grains twice a day with honey and milk along with *triphala* powder and pepper. The *Bhasma* is alterative and diuretic and is given in ozoena, consumption, enlargement of the liver etc. According to Ayurvedic works it is rarely used internally. Only Chakradatta is said to have re-commonded a *linctus* composed of iron sulphate and pulp of wood apple in hiccup. Iron sulphate is however use-ful in all diseases, where iron is indicated. The follow-ing remedies are valuable in anaemia and debility:—

(1) A grain of ferri sulphas in an ounce each of omum water and infusion of chiretta thrice a day after food. This is useful in larger doses in cases of neuralgic or rheumatic attacks recurring periodically among the weak and the anaemic. (2) Twenty-four grains of ferri sulphas and thirty grains each of black pepper and cinnamon powder, made into 12 pills with a sufficient quantity of honey and given in doses of one pill twice a day. For anaemic females suffering from chorea etc, leucorrhoea and amenorrhoea purified aloes in equal quantity to iron sulphate may be advantageously added. Though iron is useful in simple anaemias, it is useless or even harmful in pernicious anaemia. The diagnosis between the two forms is made by a microscopical examination of the blood. *Externally* iron sulphate is used in skin diseases either alone or with other medicines. Its stick or solution is applied to foul ulcers and various skin diseases as eczema, prurites, intertrigo etc. Chakra prescribes for the above complaints, a *paste* made of equal parts of iron sulphate, *gorochana* (gall-stone of cows), barberry root and orpiment, beaten into a paste with *Kanjika.* In spreading erysipelas a solution made of 10 grains of iron sulphate in an ounce of spirit of wine is applied with a camel hair brush over the reddened area of the skin and allowed to dry on; the application is repeated once a day only until the redness disappears. The part should be covered with cotton wool to exclude air. Chakradatta and Sharangadhara both recommend an oil called *Kasisadya taila*, as an application to the genitals and the breasts with the view of strengthening them. It is

applied also in fistula-in-ano for the burning and pain in piles, and in ozœna, with benefit. It is made of 16 tolas each of iron sulphate, Withania somnifera root, bark of Symplocos racemosa and *gajapippali* roots (Pothos officinalis), beaten into a paste and it is boiled with 4 seers of sesamum oil and 16 seers of water in the usual way. In bleeding piles and prolapsus of the rectum daily enemas of the simple solution of the sulphate (3 grains to an ounce of water) are serviceable. In chronic skin diseases an ointment made of iron sulphate, copper sulphate, iron pyrites and ghee is used with benefit.

26. **Ferri Sulphuretum** (*Sans.*—Svarnamakshika; Taramakshika. *Eng.*—Iron pyrites. *Hind. & Bom.*—Sonamukhi. *Guz.*—Sonamukhinagantha) is formed by a combination of iron with sulphur; it is met with in many parts of India and has been used in Hindu medicine from a very remote period. It occurs in two forms, *viz.*, in dark-yellow nodules with a golden lustre and in silvery radiated crystals. The former is called *Svarnamaksika* and the latter *Taramakshika.* Chemically iron pyrites consist of bisulphide of iron. Sulphide of iron is contained in preparations like *Lauha-parpati*, *Siddha-yogeswar* and other tantric medicines along with the sulphide of mercury and other vegetable substances. It is thus prepared :—Take 2 parts each of mercury, and sulphur and 1 part of killed iron, rub well together in an iron ladle and melt this powder with clarified butter over a gentle fire. It is then poured over plantain leaves and gently pressed and finally used with other vegetable substances. Iron pyrites is purifed by being boiled in lemon juice with

one-third of its weight of rock salt in an iron vessel, till the pot turns red hot. It is reduced to powder by being rubbed with oil or goat's urine and then roasted in a closed crucible. Iron pyrites thus prepared has a sweetish bitter taste. It is considered as tonic, alterative and useful in anaemia, leucorrhoea, urinary diseases, ascites, anasarca, prurigo, eye-diseases etc. Dose is 2 to 6 grains with honey. As an alterative tonic it is generally used in combination with other medicines of its class, such as iron, talc, mercury etc. It is contained in a preparation known as *Garbha Vinoda Rasa*. Chakradatta recommends a preparation containing iron pyrites 5 parts, prepared iron, sesamum seeds, long pepper, black pepper and ginger 1 part each, beaten into a mass with sufficient quantity of honey, to be given in doses of ½ to 1 drachm in advanced anaemia and chlorosis; it is also useful in ascites and anasarca. As an alterative tonic useful in diseases of pregnancy a compound pill called *Garbha Kalana Rasa* is given in Rasendrasarasangraha; it contains iron pyrites and cinnabar 4 tolas each, ginger, long pepper and black pepper 3 tolas each, cloves and mace 6 tolas each beaten into a pill-mass with water, and divided into pills of 4 grains each. Dose is one pill twice a day. Another compound pill containing prepared iron-pyrites (*Makshika bhasma*), *Vavading* and *Atis* each 1 part and *guggula* equal in weight to all the other ingredients, made into a pill-mass and divided into pills of two grains each, is used in doses of 1 to 2 pills with milk and *conjee* in cases of rheumatism, gonorrhoea, heart disease, lumbago, hysteria etc. An ***ointment*** made of iron pyrites, iron sulphate and

copper sulphate, in butter or ghee is a useful application in pityriasis, syphilitic sores and ulcers.

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27. HYDRARGYRUM.

Sans.—Parada; Rasa. *Eng.*—Mercury; Quicksilver. *Fr.*—Mercure. *Ger.*—Merkur. *Arab.*—Abuk; Zibakh. *Pers.*—Simab; Zeebaq. *Hind. Ben. Duk. & Mah.*—Para. *Guz.*—Paro. *Mal.*—Rassam. *Tel.*—Padarasam. *Tam. Kon. & Can.*—Padrasa. *Cing.*—Rasadiya.

Para means that which protects mankind from all sorts of diseases.

Source.—Mercury is sometimes met with free in Nature in the form of small, shining, silvery globules when it is called quicksilver; it is so found in small quantities. But it is mostly found as sulphide or native Cinnabar. It is scattered through different kinds of stones, clay or ores.

Characters.—It is a shining, silver-white metal liquid at ordinary temperature, divisible into spherical globules, mobile, without any odour or taste, slowly volatilizing at ordinary temperature; insoluble in water, hydrochloric acid, or cold sulphuric acid, but soluble in nitric acid and *hot* sulphuric acid. It readily volatilizes at a temperature of red heat without any residue. Mercury as found in the market contains impurities such as tin, lead, stone etc. If administered in an impure state it is said to bring on a number of diseases; hence it is purified before use.

Purification.—Various processes for purifying mercury are described in books. At the present day the following is generally adopted by Kavirajas. Mercury is

first rubbed with brick-dust and garlic, then tied in four-folds of cloth and boiled in water over a gentle fire for three hours in an apparatus called *Dola yantra*. When cool, it is washed in cold water and dried in the sun. Some practitioners use betel-leaves instead of garlic for rubbing the mercury with. Mercury obtained by sublimation of cinnabar is considered pure and preferred for internal use. Cinnabar is first rubbed with lemon juice for three hours, and then sublimed in the apparatus called *Urddhapatana yantra*. The mercury is deposited within the upper pot of the apparatus, as a blackish powder. This is scraped, rubbed with lemon-juice and boiled in water, when it is fit for use. A peculiar form of mercury called *Shadguna balijarita rasa* is thus prepared:—A little sulphur is placed in an earthen pot, and over it some mercury. The pot is heated in a sand-bath, and, as the sulphur begins to melt, cautiously and gradually more of it is added to or placed over the mercury, altogether to the extent of six times the weight of the mercury. When the whole is melted like oil the pot should be quickly removed from the fire, and cooled till the mass is consolidated. It should then be broken, and the mercury extracted from within the mass. Mercury thus obtained is said to be superior to all other forms, but it is not much used at present.

Preparations.—Four preparations of mercury are described in books, *viz.*, black, white, yellow and red called respectively *Krishna*, *Sveta*, *Pita* and *Rakta bhasmas*. *Krishna bhasma* is the black sulphide of mercury made by rubbing together and dissolving over the fire three parts of mercury with one of sulphur.

This black sulphide of mercury is known as *Rasaparpati*. The white preparation is the *Rasakarpura*. Several processes are given in Sanskrit works for preparing it; one is as follows, according to Rasendrasarasangraha:—Take of mercury and chalk equal parts, and rub them together till the globules disappear. Rub this mixture of chalk and mercury with *pansu* (salt obtained from saline earth) and the juice of Euphorbia nerifolia repeatedly. Enclose in a covered crucible and heat it within a pot full of rock salt. The perchloride of mercury will be deposited in the shape of a pure white powder under the lid of the crucible. But this is now-a-days prepared by subliming the black sulphide of mercury with common salt or rock salt. The yellow preparation called *Pita bhasma* is prepared as follows:—Take of mercury and sulphur equal parts, rub them together for seven days with the juice of Phyllanthus neruri and Heliotropium Indicum. Place the mixture in a covered crucible, and heat it in a sandbath for 12 hours. The result will be a yellow compound. The red preparation called *Rakta bhasma* or *Rasasindura* is prepared in a variety of ways. The following is one of them:—Take of mercury and sulphur equal parts, rub together with the juice of the red buds of Ficus Bengalensis for three days successively, introduce the mixture within a bottle and heat it in a sand-bath for 12 hours. A red deposit will adhere below the neck of the bottle. It is taken out in the shape of dark red shining scales. The black sulphide prepared by rubbing together equal parts of sulphur and mercury till the globules disappear is called *Kajjali*. The red sulphide is called *Hingula* (*Eng.*—Cinnabar or Vermilion. *Arab. Pers. Hind.* & *Bom.*—Sinjraph. *Guz.*—

Hingalo. *Mah. Can.* & *Kon.*—Inglika). These four preparations, *viz*. Cinnabar or *Hingula*, *Kajjali*, the red preparation called *Rasasindura* and the *Rasakarpura* of the bazaar are the four principal forms in which mercury is used in Hindu Medicine; that is they constitute the basis of all the formulae containing mercury. *Hingul bhasma* or red sulphide ash is prepared by taking red sulphide 4, orpiment 1 and cloves 4 parts, and making a bolus in the juice of fresh ginger and roasting it in a crucible over a fire and reducing the whole to ashes. Dose is $\frac{1}{3}$ to $\frac{1}{2}$ grain.

Action.—Mercury is tonic, alterative, purgative, indirect cholagogue, antiphlogistic, antiseptic and sialagogue. When taken into the system it combines with the acids and fluids of the body; it is then easily absorbed by the skin, the mucous membranes, lungs and stomach and passes into the blood as oxy-albuminate. In the stomach it is converted into double chloride of sodium and mercury. It unites with the albuminous juices and is easily absorbed. In the intestines only a small portion of it is absorbed; the rest being converted into a sulphide and eliminated with the fæces. In small doses it acts as a blood tonic. It increases the number of red corpuscles and thus, in syphilis it counteracts the effects of poison in the blood. In large doses it impoverishes the blood and lessens its coagulability and therefore it should not be used in haemorrhagic diathesis and in cases of repeated attacks of menorrhagia; it diminishes the red corpuscles, lessens oxygenation, promotes the waste of tissues and disorders nutrition and digestion. It stimulates the salivary, duodenal and the pancreatic glands and the bile

ducts and thus increases the flow of bile. It also stimulates the liver cells and hence acts as an indirect cholagogue. It may be found in the blood, saliva, milk, urine, sweat, bile, pus, as also in various tissues of the body. In pregnant women mercury leads to abortion, still-births and births of cachectic infants; in children, it leads to a low state of the body known as Marasmus, and in adults, to a kind of cachexia characterised by wasted muscles, pale skin and tendency to haemorrhages etc. Over-doses or long continued use of mercury produce a set of symptoms known as mercurialism characterised by symptoms of profuse salivation, swollen and spongy gums, foul breath, swelling of the tongue, ulceration of the mouth, lips and tongue, loosening of the teeth etc., etc. Mercury has the wonderful property of absorbing, as it were, the actions of the other drugs with which it is sublimed; *e. g.*—silver and copper when roasted with mercury and sulphur impart their antispasmodic and tonic properties to the red sulphide which sublimes. Lead when roasted in a similar way with sulphur and mercury imparts its astringent property to the red sulphide of mercury. When sublimed with gold the red sulphide becomes a valuable tonic though red sulphide prepared without gold has quite different properties—(H. C. Sen). He says that insoluable preparations like Calomel are not necessarily inert; and says that the red sulphide and the black sulphide of mercury are extremely efficacious in liver complaints, such as commencing cirrhosis of the liver, dyspepsia, chronic dysentery and similar other allied diseases, such as chronic diarrhoea where the stools are deficient in bile. "I generally use these

preparations in 5 to 15-grain doses twice a day. The most important precaution to be observed by the patients while using these preparations is that they have to give up salt and water altogether. The result is marvellous. In those cases of sloughing dysentery in whom these were administered in the very last stage, I have invariably noted golden yellow bile in the upper part of the intestines and in the gall-bladder. It is well-established fact that natural bile secretion is essential in the treatment of dysentery and other bowel complaints, including even cholera". The sulphides produce "asepsis in the large intestine owing to their slow absorption, like salol and beta-naphthol, and to their stimulating the liver to secrete golden-yellow bile."

Uses.—In fevers of all descriptions mercury is used in combination with aconite, croton seed, *datura* and other drugs; *e. g.*:—The preparation called *Hingulesvara* contains equal parts of Cinnabar, aconite and long pepper rubbed together and made into pills about four grains each. These are given beaten up with a little honey in ordinary remittent fever. In the *Vayu* type of remittent fever and that of typhoid fever, *Mrityunjaya Rasa* containing Cinnabar 2 parts and corrected aconite, sulphur, black and long pepper and borax each 1 part, well powdered and rubbed into a paste with water for days together and divided into two-grain pills, is recommended—(Rasaratnakara). In fevers with constipation, another combination called *Jwaramurari Rasa* is recommended—(Bhaisajyaratnavali). It contains Cinnabar, aconite, *trikatu*, borax,

chebulic myrobalan and corrected croton seeds, pulverised, well beaten and made into pills of 2 grains each administered generally with honey and ginger-juice. The pills called *Taruna Jvarari* contain equal parts of mercury, sulphur, aconite and croton seeds rubbed together with the juice of Aloe Indica and made into four-grain pills. These act on the bowels and relieve fever. They are given with sugar and water—(Bhaisajyaratnavali). Pills called *Tribhuvan Keerti rasa* of which the chief ingredients are *Rasasindura*, aconite, *trikatu, pippali moola* (long pepper root) are used in high fevers and all local acute inflammations such as those of pneumonia; erysipelas and painful neuralgic affections. Dose is 2 to 6 pills of 1 grain each every two hours until fever subsides. In diarrhoea and dysentery of obstinate chronic form, mercury is used in a great variety of preparations, for example :—*Vajrakapata Rosa* is made of equal parts of mercury, sulphur, opium, *mocha-rasa, triphala, trikatu*, powdered, mixed and soaked in the fresh-prepared leaf-juices of Cannabis Sativa and *Bhringaraja* seven times and made into pills of six grains each. These are administered with honey in obstinate chronic diarrhoea. Dose is from 1 to 3 pills three times a day. (2) *Anandabhairava Rasa* containing Cinnabar, aconite, black pepper, borax and long pepper in equal parts, mixed and reduced to a fine powder is given as a specific for chronic diarrhoea, dyspepsia, colic and diarrhoea of typhoid fever. Dose is 5 to 10 grains given with honey mixed with the decoction of the bark of Holarrhena Antidysenterica. It may be given mixed with lime juice or ginger juice in a pill-form also.

Gandhar Rasa made up of equal parts of prepared mercury, sulphur, opium, H. antidysenterica, Aegle marmelos, *lodhra* bark, *Nagarmotha, mocharas* and *dhania* flowers, is also useful. Dose is 2 to 5 grains with whey. (3) *Panchamrita parpati* consists of mercury 4 tolas, sulphur 8 tolas, prepared iron 2 tolas, prepared talc 1 tola and prepared copper ½ tola, all rubbed together in a mortar and melted in an iron ladle and prepared into disks. Dose is 4 grains with honey and ghee, gradually increased to 16 or 18 grains—(Bhaishajyaratnavali). *Parpatis* of different sorts when given in cases of diarrhoea with anasarca are conjoined with a milk diet, and water and salt are prohibited. (4) *Mahagandha rasa* made up of mercury and sulphur, nutmegs, mace, cloves and neem leaves each two tolas, powdered, mixed together and roasted in the usual way. It is administered in doses of about 4 grains in the acute diarrhoea of children—Rasendrasarasangraha). H. C. Sen says that "the sulphides of mercury are direct cholagogues, and that they have no equal in chronic dysentery, even of the sloughing type. The precaution of stopping salt and water must be strictly carried out. "I have cured very obstinate cases of dysentery, cirrhosis of the liver with accumulation of fluid in the peritoneal cavity and obstinate cases of dyspepsia and chronic diarrhoea with these sulphides. Though these are far inferior to the soluble preparations of mercury, yet they are decidedly efficacious, and they have a peculiar advantage for they never produce mercurial poisoning...I have used other preparations of mercury like corrosive sublimates, calomel, grey powder, blue pill, etc., in dysentery with or

without small doses of ipecacuanha. There are many men who use calomel in large doses for the treatment of cholera...I think half a grain or a quarter grain of calomel, or even less, often succeeds in giving suitable cases of cholera a favourable turn. The big doses of calomel produce salivation after convalescence. Everybody knows that at the evacuation stage of cholera hardly anything is absorbed from the gastro-intestinal tract. Whatever is done by the administration, say of 10 or 20 grains of calomel, is achieved by a very small quantity which actually reaches the liver. The rest of the calomel if not thrown out with the faecal matter, is sure to produce salivation. Very minute doses of calomel give a favourable turn to cholera by checking vomiting and bringing on secretion of bile and of other digestive fluids. The unutilised part of the big dose of calomel is absorbed in the convalescent stage, and makes the poor patient suffer from calomel poisoning. In hyper-acidity, indigestion and dyspepsia a compound pill named *Vadavanal Rasa* containing *Kajjali*, *panchalavana* (five salts) *Yavakshara*, *Swarjikakshara* (carbonate of soda) and borax is recommended. Dose is 1 to 4 pills of 5 grains each *three* times a day. This was tried with success in cases of chronic gastritis (Ind. Drugs Reports Madras). As antiparasitic and vermifuge combinations like *Krimimudgar Rasa* (see Ferrum), *Krimikalanal Rasa* (see Ferrum), *Krimidhuli Jalaprabha Rasa* (see Calcium) and *Krimi-rogari Rasa* (see Ferrum) are in use. In jaundice mercury is used along with other alteratives and purgatives, as for example, in the compound pill called *Pandusudana Rasa* containing equal parts of

mercury, sulphur, prepared copper, croton seeds and bdellium rubbed together with ghee and made into two-grain pills. They are given with the juice of *neem* bark and honey in jaundice. Acids and cold water for drinking should be avoided. For dropsy a compound pill known as *Vahni Rasa* is said to be a specific. It is prepared thus:—Take of prepared mercury 4, sulphur, Curcuma longa, *Triphala*, each 2 parts, Ipomoea turpethum, Croton tiglium, Plumbago zeylanica each 3 parts, dry ginger, black pepper, long pepper, Beliospermum montanum, and Cuminum cyminum each 8 parts. Reduce the whole to a fine powder, triturate it in the juice of Clerodendron phlomoides, Eclipta prostrata, and add Castor oil to make a pill mass. Dose is 5 to 10 grains, to be given in warm water. Another pill named *Lokanatha Rasa*, containing *Kajjali*, *Abhraka*, *Loha* and *Tamra bhasmas* is useful in dropsy, jaundice and liver diseases. Dose is 1 to 4 pills three times a day with honey. In affections of the lungs mercury is used in a variety of combinations. The following are a few examples:—*Rasendra gutika* prepared by adding 2 tolas of purified mercury, 1 tola of the juice of *Jayanti* leaves and of fresh ginger, then soaking it in the juice of Jussiaea repens and Solanum Indicum respectively for 24 hours, and then mixing with it 8 tolas of purified sulphur previously soaked in the juice of *bhringaraja* and dried and rubbing together the whole with 16 tolas of goat's milk to form a pill-mass and dividing it into pills of 4 grains each. This pill is given with goat's milk and juice of ginger in bronchitis and cough generally—(Chakra). ***Rajamriganka Rasa*** contains the parts of *Rasa sindura*, one part each of prepared gold and

copper, and 2 parts each of realgar, orpiment and sulphur, mixed and reduced to a paste with goat's milk and roasted in shells and taken out when cold. Dose is 4 grains with 2 grains each of long pepper and black pepper and honey and ghee; it is used with much benefit in phthisis and chronic bronchitis with fever—(Bhaisajyaratnavali). Another compound powder called by the same name contains red sulphide ash 3 parts, gold ash or *Suvarna bhasma* and *Abraka bhasma*, shell-ash or *Cowri bhasma* and borax each 1 part, realgar, orpiment and sulphur each 2 parts, mixed, powdered and roasted. Dose is 1 to 5 grains with honey or with confection of black and long pepper in asthma etc. In diseases of the nervous system several combinations of mercury with gold, iron, talc etc., are used such as *Chaturmukha Rasa*, *Chintamani Chaturmukha*, *Yogendra Rasa* etc., which are all similar in composition slightly varying in the proportions of the active ingredients and their adjuncts. Thus *Chintamani Chaturmukha* consists of two tolas each of *Rasasindura*, one tola of prepared iron, half a tola of prepared gold, all rubbed together with the juice of Aloe Indica and made into two-grain pills. This is used in nervous diseases, insanity, cephalalgia, deafness, noise in the ears, paralysis of the tongue, diseases of the female and urinary organs, phthisis, fever etc., and said to improve nutrition, increase the appetite and strength and brighten the complexion. As a tonic in all conditions of debility, a compound pill called *Agnithundi Vati* the chief ingredients of which are sulphide of mercury, *trikatu*, *chitraka*, the carbonates of sodium and potassium, nuxvomica, aconite etc., is given in dyspepsia, indigestion, colic etc—(Sharangadhara). Dose

is 1 to 4 pills of one grain each with milk or water after meals. To check asthma and other forms of difficult breathing, mercury is used in the form of *Swasa Bhairava Rasa* or *Swasa Kuthar Rasa* which are both similar in composition (see under Bisulphuret of Arsenic). For flatulence and constipation a purgative called *Ichchabhedi Rasa* containing Cinnabar, borax, dry ginger and long pepper 1 part each and the root of Baliospermum montanum and *triphala* 4 parts each, mixed and powdered and the whole boiled in milk till reduced to the consistance of an extract. Dose is 3 to 5 grains. It is also given in dropsy (ascites). As an alterative tonic *Rasasindura* as well as its two other forms called *Shadguna balijarita rasa sindura* and *Svarna sindura*, is much used in a variety of diseases; *Shadguna balijarita rasasindura* is simply *Rasasindura* obtained by sublimation, again sublimed with equal quantity of sulphur six times. It is considered superior to the ordinary *Rasasindura. Svarna sindura* is prepared out of one tola of fine leaf-gold, 8 tolas of purified mercury and 12 tolas of sulphur, all mixed and rubbed together till the mass becomes black and then sublimed in a glass bottle on the sand bath. These three forms of *Rasasindura* are said to cure all sorts of diseases, but are particularly used in chronic fever, catarrh and cough of children, mental and bodily debility, anaemia etc.—(Sanskshiptasara). As an alterative in chronic diseases, *Trivikrama Rasa* is recommended. It contains prepared mercury, sulphur, *Tamra bhasma* in equal weights, triturated in the leaf-juice of *Nirgundi* to a paste and dried in a sandbath. Dose is 5 to 7 grains. It is said to be of special use as a lithontriptic and is given in cases

of uric acid diathesis, gravel etc. In the treatment of small pox *Rasasindura* is used in the form of *Kastur Bhusan*; it is composed of *Rasasindur*, mica, borax burnt, seed of *Danti*, camphor and musk, Cannabis and *Trikatu* rubbed with ginger juice and made into pills. These are administered with honey and paste of *Rudraksha*, when there is high fever, delirium or drowsiness, severe pain in the sides etc. When there is high fever with acute coryza and pain in head and body, during the first stage (incubative stage) *Svalpa Lakshmibilas* or *Kapha Chintamani* is recommended. *Kapha Chintamani* is composed of purified mercury, *indrajav*, burnt borax, black pepper, cannabis *Rasasindura*, rubbed with juice of ginger and made into pills; to be given with honey and juice of the leaves of *Tulsi* (Holy Basil). Mercury is used in syphilis both externally and internally; *e. g. Saptasali Vati* recommended in Bhavaprakash, is made up of mercury and catechu each ½ tola, pellitory root 1 tola and honey 1½ tola, rubbed together till the globules of mercury disappear and divided into seven pills or boluses. One pill is administered every morning in primary syphilis. Acids and salt are forbidden during the use of this medicine. *Chandrodaya rasa* made up of mercury (*Kajjali*), *Abhraka bhasma*, *Vanga bhasma*, *silajit* and cardamoms in equal parts, mixed together and triturated in the juice of plantain tree to form a pill mass is used in gonorrhoea, syphilis, leprosy, jaundice etc. Dose is 2 to 4 grains. A preparation used by Hakims in cases of syphilis is made of mercury, mastiche and sugar 9 *mashas*, olibanum 15 *mashas*, and Frankinsense 7 *mashas*, triturated and made into pills. Dose is 3 *mashas* continued for a week. As

a tonic alterative useful in hemiplegia, paraplegia and paralysis a pill called *Ekangaveera Rasa* containing *Kajjali*, *Vanga bhasma*, *Loha bhasma*, *Naga bhasma* (Calcined zinc) *Tamra bhasma*, *Abhraka bhasma* and Nux vomica is recommended. Dose is 1 to 4 pills of 2 grains each twice a day. A compound pill called *Vataraktantaka rasa* containing mercury, sulphur, iron, orpiment, realgar, *silajit*, *triphala* and a number of other vegetable substances, is recommended in nervous diseases such as hemiplegia, paraplegia, facial paralysis, rheumatism etc. Dose is 1 to 4 pills of 2 grains each three times a day. "It was given to a case of hemiplegia in an old man with considerable benefit"—(Ind. Drugs Report, Madras). *Pradararipoo Rasa* containing cinnabar, *Naga bhasma* (Calcined tin or zinc), *Rasanjana* (extract of Berberis Aristata) and Symplocos racemosa is said to be useful in leucorrhoea and chronic diarrhoea. Dose is 1 to 4 pills three times a day with rice water. "It proved to be efficacious in both the diseases"—(Ind. Drugs Report, Madras). For *external* application in syphilis about a drachm of mercury is recommended to be rubbed between the palms with the juice of the leaves of Sida Cordifolia till the globules of mercury are no longer visible. The palms are then to be warmed over the fire till perspiration breaks out from them—(Bhavaprakasha). For *fumigation* in primary syphilis about half a drachm of the black sulphide mixed with $\frac{1}{4}$ part of wheat-flour is employed daily for seven days in succession. In secondary syphilitic eruptions, a powder composed of two parts of cinnabar and one of realgar is used for fumigation. About 15 grains of this is used at a time. Powders for

fumigation are heated over a fire of jujube tree wood and the vapour is applied to the skin under cover in a closed room. In skin diseases like ringworm, eczema, prurigo, psoriasis etc., several applications containing mercury are used; *e. g.*:—Take of cinnabar, sulphur, red oxide of lead, rock salt, seeds of Cassia tora, *baberang*, Cleome felina and the root of Aplotaxis auriculata in equal parts, powder them and reduce to a thin *paste* with the juice of datura, neem or betel leaves—(Sharangadhara). For lice in the hair mercury rubbed with datura or betel-leaf is recommended to be applied to the scalp—(Chakra). *Oleate* of mercury and morphine is used as an external application in obstinate and painful tonsillitis and inflammation of the lymphatic glands—(Ringer). An *ointment* of cinnabar is applied to bring about the resolution of buboes. An ointment made by boiling equal parts of sweet oil and cinnaber till it becomes black and then adding to it camphor and stirring uniformly is a useful application over boils. A *powder* of cinnabar, dusted into the eyes is a useful *collyrium* to cure ophthalmia.

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28. MICA.

Sans.—Abhra, *Eng.*—Talc; Muscovy glass; Glimmer. *Pers* &*Duk.*—Talk. *Arab.*—Kabubul ars. *Hind.*—Avrak. *Guz.* & *Mah.*—Hingool. *Cing.*—Kin. *Can.* & *Kon.*—Bhinga.

There are four varieties.—White (*pinaka*), red (*naga*), yellow (*manduka*), and black (*vajra*), of these, the black variety (*vajrabhra*, *Krishnabhra* or *Sheabhra*) is used in medicine.

Source.—Chiefly found in mountains. In India it is found chiefly in the districts of Nellore and Hazaribagh

and in the hills of the Central Provinces and Rajputana. It occurs in a natural state either as an essential constituent of igneous rocks or as a product of mineral silicates by weathering or contact.

Characters.—A kind of crystalline mineral, of a foliated texture capable of being divided into extremely thin flakes or leaves, having a sensible elasticity and a metallic lustre. The flakes are transparent, soft and can easily be scratched. When divided across the plates seem rather to tear than break.

Constituents.—Mica is a rock forming mineral. It is a silicate of aluminium together with alkalies and basic hydrogen—(Jour. Ayur. July 1924). It contains 4 to 6 p. c. of water existing as basic hydrogen or as hydroxyl replacing fluorine.

Purification & Preparations.—"Mica the layers of which can be easily separated (by knife) is preferred" (Rasaratna Samucchaya). It is purified by boiling it in the decoction of *Triphala* or of dried plums for a long time and roasting or calcining it over a fire alternately, soaking it in the juice of lemons till the scales are separated. The calcined scales are ultimately mixed with the paste of *tandulia* (Amaranthus polygamus) and finally dried. Or it is first heated and washed in milk. The plates are then separated and soaked in the juice of Amaranthus polygamus and *Kanjika* for eight days. Talc thus purified is reduced to powder by being rubbed with paddy within a thick piece of cloth, when the powdered talc passes through the pores of cloth in fine particles and is collected for use. Talc thus reduced to powder is called *Dhanyabhra*. It is hard, heavy, very

fine, black and of saline earthy taste. It is prepared for medicinal use by being mixed with cow's urine and exposed to a high degree of heat within a closed crucible, repeated for a hundred times. Sometimes the process is said to be repeated a thousand times. When this is the case the preparation is called *Sahasraputi Abhra* and sold at high price. Some soak it in the juice of Calotropis gigentia instead of cow's urine, before calcining. It is considered to be of superior efficacy. Ayurvedists believe that burning and pulverising repeatedly of the minerals produce a "potency" or peculiar molecular change in these and add to the therapeutic value of the product. *Dhanyabhra* or Talc powder consists of Silicate of magnesia with iron in excess. *Abhra bhasma* is prepared by heating together *Dhanyabhra* 1 part and borax 2 parts and triturating the whole in milk and evaporating. It is generally given with *Lohabhasma*. Dose is 2 to 5 grains. *Abhra Kalka* (emulsion) is prepared by mixing together *Abhra bhasma*, emblic myrobalan, ginger, pepper, long pepper and *Vavadinga* in equal parts, reducing the whole to a uniform mass and then adding honey. Dose is 10 to 40 grains.

Action.—Mica is a disinfectant to some extent, but is seldom used as such. According to Rosenheim and Ehrmann (Deut. Med. Woch, 20, Jan. 1910), aluminium silicate when taken into the stomach, reacts with the excess of hydrochloric acid in the gastric juice to form silicic acid and aluminium chloride the latter acting as a protective to the gastric mucosa in a manner similar to bismuth. It will be interesting to see whether prepared mica which is also a silicate has any such in the stomach

as it has always been found useful in acid dyspepsia and gastric ulcer *e. g. Vidyadharabhra*—(Jour., Ayur., July 1924). Silicilic acid is present in various percentages from 0·81 p. c. down to a trace, in the muscle, liver, spleen, lymph and intercellular fluid and also found in the various excreta—urine, faeces and sweat. Mica being a silicate its action as a therapeutic agent can thus be surmised. Reduced mica is described in Ayurveda as a general tonic and alterative. It is said to stimulate metabolic activity of tissue cells generally. It is also used as aphrodisiac. Reduced mica is considered to remove the derangement of the *tridoshas* and to establish their equipoise. *Dhanyabhra* is considered tonic and aphrodisiac. Generally the preparations of Mica are astringent, tonic, aphrodisiac and alterative. *Abhra Kalka* is alterative and restorative.

Uses.—*Abhra Bhasma* is given in anaemia, jaundice, chronic diarrhoea and dysentery, nervous debility, chronic fever, enlarged spleen, urinary diseases, impotence etc ; also in dyspepsia, asthma, hectic fever, and consumption ; and in cachexia due to long continued discharges from fistulae, abscesses, gonorrhoea, leucorrhoea etc., it may be given with honey and *pipali* with benefit. As an astringent it is largely used in diarrhoea, especially of nervous origin. As an alterative it is used in enlargement of glands. Dose is 2 to 6 grains generally with honey, twice a day. In phthisis or tuberculosis it is given in doses of 2 to 3 grains twice daily either with a little honey or with honey and some vehicle as the fresh juice of *Vasaka* or with the fresh juice of the ripe fruits of Cactus grandiflora. The mica supplies silica to the

connective tissue cells and thus helps them to form defensive barrier around the tubercles or the pus-forming bacteria. In asthma reduced mica is given with the juice of *Vasaka*. In intestinal worms reduced mica is given with seeds of Embelia ribes and a teaspoonful of clarified butter. In cases of biliousness and jaundice it is prescribed with sugar and milk. In gonorrhoea it is given with honey and powdered *peepul* and turmeric 12 grains per dose. In chronic spermatorrhoea it is given with the juice of *gulancha* and cane sugar. In anaemia and chlorosis it is given in combination with iron (*Loha bhasma*); in scurvy it is administered with honey and lemon juice. In rheumatism reduced mica is given with a decoction prepared from ginger, root-bark of Aplotaxis auriculata, Clerodendron siphonanthus and Withania somnifera each ½ tola and water 8 ounces, reduced by boiling to 2 ounces, which is quite sufficient as an usual dose for an adult. In farunculosis and cancer reduced mica is prescribed with *Murba* plant (Senevieria zeylanica). In piles reduced mica is given with the peduncles of the ripe fruit of Semicarpus anacardium. *Abhraka Kalka* is given to improve digestion and in seminal debility. In chronic fever and enlarged spleen *Jvarasani Rasa* is recommended in Bhaisajyaratnavali. It is prepared thus:—Take of mercury, sulphur, rock salt, aconite and copper, one part each prepared iron and talc, five parts each, rub together with the juice of Vitex negundo leaves, then add one part of black pepper and make into two-grain pills. They are administered with the juice of betel leaves. In chronic diarrhoea and indigestion the same recommends *Agnikumara Rasa* and it is prepared thus.—

Take of mercury, sulphur, borax, iron, aconite, ginger, long pepper, black pepper, *ajowan* and opium each one part, prepared talc ten parts, rub together for three hours with the decoction of Plumbago rosea and make into pills of the size of black peppers. In loss of appetite, disinclination for food, dyspepsia, vomiting, urinary diseases, anasarca and debility, *Sulachanamrit-abhra* is prescribed in Rasendrasarasangraha. It is thus prepared:—Take of prepared talc 3 tolas, rub it with 8 tolas each of the fresh juice or decoction of the following drugs, *viz*., pulp of Ziziphus jujuba, Chavica officinarum, root of Andropogon muricatus, pomegranate fruit, lemon juice, emblic myrobalan and Oxalis corniculata, and make into pills about 6 grains each. This is tonic, alterative and aphrodisiac. The preparation called *Kandārpa kumar-abhra* is very similar to the above in composition. In convulsions, hemicrania and neuralgia, pills called *Lakshmi-narayen Rasa*, the chief ingredients of which are *Abhrakā bhasma*, *Rāsasindura*, aconite, *Katuki* and bark of Holarrhena antidysenterica, have been used. These were tried and found to be useful in reducing the temperature and causing diaphoresis in remittent and intermittent fevers. Dose is 1 to 3 pills every three hours during fever—(Ind. Drugs Report, Madras). In disorders of the urine, pills called *Harisankara Rasa* prepared by soaking prepared talc in the juice of emblic myrobalans seven times in the course of a week and made into two-grain pills, is recommended in the same. The same prescribes for heart disease pills called *Arjunabhra*, which are prepared by soaking some prepared talc in the juice of the bark of Terminalia arjuna seven times and dividing the mass into two-

grain pills; *arjuna* bark being considered a specific for this complaint. In phthisis and chronic bronchitis, four-grain pills called *Sringarabhra* recommended in Sarakaumudi are used. They consist of prepared talc, purified sulphur, mercury, camphor and a number of stimulant, aromatic and expectorant vegetable drugs. Dose is one pill chewed with betel leaves and ginger followed by a little water and taken three or four times daily. The diet should consist of ghee, milk and broth. For asthma accompanied with fever *Brihat Chandramrita Rasa*, containing mica and iron, mercury, sulphur, gold, copper, camphor and a number of vegetable drugs and prepared in honey, is recommended. In *Vayu-kapha* variety of "*Swasa*" with fever and phlegm in chest, *Jwarasani Lausha or Mahaswasaari Lauha* (described under "Ferrum") is given. The former contains besides mica and iron, mercury and sulphur, rock salt, aconite, copper, black pepper and Vitex negundo. Besides these there are other allied preparations containing Mica *viz.*, *Jvarari abhra, Dameswer abhra, Brihat Kanchanabhra, Kalyansunder abhra* etc., which are useful in these complaints, under different conditions. For general debility, impotence etc., *Mahalakshmivilasa Rasa* (see "Argentum") is recommended. Another preparation of similar composition and called *Manmathabhra Rasa* is also used for the same complaints. Vishagbhushan Kaviraj A. C. Bisharad mentions (Jour. Ayur. Aug. 1925) a case of paralysis of tongue in an old lady of 80 rendering her unable to utter a single word, and which was given up by her attending Doctor, rapidly cured by him under the treatment of *Lakshmibilas Rasa* internally and for external

application in the whole region of the tongue and the throat, of the concentrated extract of the leaves of wild fig tree (*Audumbar*). *Lakshimibilas Rasa* is composed of reduced mica and sulphide of mercury 8 tolas each, camphor 4 tolas, seeds of Gmelina asiatica, of *datura*, of Cannabis indica, Ipomaeia digitata, Asparagus racemosus, roots of Sida spinosa and Sida cordifolia (yellow variety), seeds of Tribulus terrestris and Eugenia acutangula 2 tolas each, finely pulverised, well mixed and the whole soaked with the juice of betel leaves and rubbed well in a stone mortar for days together so as to reduce it to a pill-mass, which is divided into pills of 6 grains each, dried well and preserved in a glass-stoppered bottle. This medicine is said to allay many serious and complicated conditions. In small-pox with high fever, delirium and severe pain in the sides etc., *Kastur bhusan* (described under Hydrargyrum) is administered with honey and paste of *Rudraksha*. In leprosy with ulceration of the toes and fingers, *Galithkusthuri Rasa* described in Bhavaprakash is given. It is made of prepared talc and the seeds of Pongamia glabra 4 parts each, mercury, sulphur, prepared copper and iron, bdellium, plumbago root, *silajit*, nuxvomica and *triphala* each 1 part, rubbed together with honey and ghee and preserved in an earthen pot smeared with ghee. Dose is about a drachm. The diet should consist of fine rice, milk, sugar and honey. The patient must live apart from his wife. *Abhra bhasma* with iron, and *silajit* basmam prepared with a number of vegetable drugs added, has been extolled as a specific for diabetes mellitus. This has been referred to under *Silajit* (Asphalt) which see. Dr. Koman used *Abhra bhasma* (calcined 100

times) in four cases of diabetes mellitus, in doses of 2 to 6 grains twice a day with honey. In all cases of diabetes mellitus he says there was a gradual diminution in the quantity of sugar eliminated in the urine and the patients gained strength—(Ind. Drugs Report, Madras). The following additional remedies containing talc are useful in various complaints.—(1) Take of *Abraka bhasma* 2, *Para kajali* 2, Balsamodendron Mukul 4, fecula of Cocculus cordifolia 8, and Tribulus terrestris 5 parts. Mix, then add the juice of Vitex negundo and Cocculus cordifolia. Macerate well, and dry. Dose is 2 to 4 grains with the decoction of long-pepper; used in rheumatism. (2) Take of *Abraka bhasma* 3, sulphur 2, Croton seeds 2, borax 2 parts. Mix and triturate in the juice of Citrus limonum. Make a pill mass. Dose is 3 to 5 grains with rice *conjee*; used in intestinal worms, colic, etc. (3) Take of *Abraka bhasma*, *Para kajali*, *Mandura* (Ferri peroxidum) equal parts. Mix and macerate the whole in the juice of Asparagus racemosus. Dry the paste over a sand bath. Dose is 1 to 3 grains with black pepper and sugarcandy; used in consumption, fevers etc.

The virtues of the *Sweta* or white variety of mica are highly extolled as being of greater efficacy in eye-diseases, so much so that a grain or two of this preparation taken daily for some length of time is said to endow the blind with sight! The process of reducing white mica is thus.—Take 12 tolas of white mica and purify it by soaking in cow's urine for 7 days. Then having dried it, heat it in fire and gradually soak it in (1) *Mansha-Kshir* (milk of Euphorbia nerifolia) (2)

Batakshir (milk of banian tree) (3) *Arka Kshir* (milk of Calotropis gigentia) seven times each. Then dry it and soak in vinegar for 40 days, after which it should be taken out and rubbed and pulverised. Mix this powder with ½ tola mercury (previously purified by treating with slaked lime) and flower of Acacia Arabica 1 tola and rub till well mixed and prepare small cakes and again soak in vinegar in a stone mortar rubbing daily for three consecutive days. When it assumes the required consistency prepare into small cakes, dry them in the sun and burn in a covered crucible (*Gajaputa*). This process of soaking in vinegar and burning should be repeated thrice when the white mica is reduced. Then correct this in the usual process of *Amritikaran*, before it is ready for use. The following is the process for *Amritikāran* or final "vitalization"—The reduced powder 1 seer, cow's ghee 24 ounces and the decoction of the *Triphala* or the three myrobalans one and a half seer should be gently boiled together in an iron pot. When the watery portion is evaporated, let it cool. When dried and pulverised this becomes ready tfor use. Dose.—½ to 2 grains daily with honey and he decoction of the three myrobalans.—(Jour. Ayur).

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29. PLUMBUM.

Sans—Seesaka; Naga *Eng.*—Lead. *Arab.*—Ressas. *Pers.*—Anuk. *Hind.* & *Ben.*—Sisa. *Guz.*—Kalun sisun. *Mah.* & *Kon.*—Shishe. *Tam.*—Iyam. *Tel.*—Sheeshamu. *Can.*—Sheesa. *Mal.*—Tismahitam. *Burm.*—Khaipok.

Source.—Lead never occurs free in Nature, but is generally met with as sulphide *i. e.* galena from which it

is obtained by roasting. It rarely occurs as oxide (minium) most frequently as carbonate (white lead ore). The red oxide of lead or minium was manufactured by the Ancients under the name of *Sindura* which is used by Hindu women for painting a *tilak* on the forehead.

Purification.—Lead is prepared and purified by roasting galena in a crucible, then dropping the melted liquid through a hole into a vessel containing decoction of *triphala* or in the milky juice of *Ahada*; when cool it is said to be purified lead.

Characters.—It is bluish grey, soft, flexible metal very malleable and slightly tenacious, freely soluble in nitric acid. It is not sonorous when pure. When heated to a white heat it volatilizes and the vapour when collected is known as oxide of lead or flowers of lead; when heated to fusion and exposed to air it forms a dross or pellicle or a yellow powder known as protoxide of lead or Massicot (*Hind.*—Murdarsing); at a still higher temperature over a brisk fire it forms crystalline scales of a brick red colour known as Litharge.

Preparation.—*Seesa bhasma or Naga bhasma* (Lead ash); it is prepared by reducing lead and calcining it with Sulphide of Arsenic (*Manasila*), then adding the juice of betel leaves and rubbing into a fine powder. Dose is ½ to 2 grains, with milk.

Action.—*Seesa bhasma* is astringent; it is also said to be a diuretic and vermifuge. Externally it is used as sedative and astringent.

Uses.—It is useful in urinary diseases and in expelling worms; in chronic diarrhoea and other chronic discharges as leucorrhoea, gonorrhoea, menor-

rhagia, excessive suppuration, ulceration of the stomach, internal haemorrhages as haemoptysis, haematemesis etc , also used in cough with profuse expectoration, in night sweats; also emplcyed with benefit in aneurism of the aorta, hypertrophy of the heart and in epilepsy. In caseous pneumonia it is given with digitalis and opium. *Externally* it is used in the form of *ointment* for excoriations, contusions, sprains, skin diseases accompanied with irritation etc; as a *suppository* it is used in haemarrhage from the rectum as well as to soothe the irritation of piles. Prof. Blair, the Director of Cancer Research at the Liverpool Infirmary, has told the Toronto academy of Medicine of a number of cases of cancer which have been cured in Liverpool by the injections of lead. Dr. Adami, the Vice-Chancellor of the Liverpool University, said that Prof. Blair's declarations had been forced as the result of astounding cures of a number of cases that had hitherto been regarded as incurable. So many of these cases had been cured that the matter could not be kept private any longer. He added that owing to the nature of the treatment it had been proved that it is possible to treat only those cases that had been given up as hopeless. He added there had been cases of recrudescence owing to doses being too small but he declared that the success achieved indicated great strides- (Practical Medicine, Feb, 1926).

30. Plumbi Carbonas (*Eng.*—White lead; Flake white lead; Hair powder. *Arab.*—Isfedaj. *Pers.*—Sufeadba. *Hind. Duk. & Ben.*—Sufeda. *Guz. & Mah.*—Sapeta. *Tam.*—Velliyya. *Tel.*—Shish. *Mal.*—Timaputih) is found in Nature both as crystallized and in a massive

state. It is a soft heavy white powder, artificially prepared by suspending sheets of lead over the vapours of heated vinegar, when the air becomes charged with carbonic acid gas and the vapour of vinegar corrodes the plates. The corroded rust when collected is known as *Sufeda*. It is used locally as sedative and astringent, to protect irritated surfaces as in erysipelas, erythema, intertrigo etc. It should never be used when the skin is broken or abraded. Combined with butter it is used as *ointment* to eruptions on the scalp, to superficial burns, over the unbroken skin in swollen and inflamed parts and excoriations and in small pox.

31. Plumbi Oxidum (*Eng.*—Flowers of lead; Massicot; Litharge. *Arab. Pers. Hind. Ben. Duk.* & *Mah* —Murdosing. *Guz.*—Bodarakakaro. *Tam.* & *Tel* — Mudarasingu. *Can.*—Mudadashringi. *Mal.*—Mudarsinka) is met with in pieces or powder. It is of a light yellow colour mixed with red and has a metallic lustre. It resembles mica very much in appearance. The powder is here and there impregnated with brick colored clay. In smell and taste it resembles *gopichandana*. It is a powerful local astringent, cooling and an insecticide. It is never used internally, but *externally* as *ointment* etc., for baldness, itching and skin diseases. Its *paste* is a useful application for unhealthy ulcers. Dissolved in vinegar or in rosewater it is used in prickly heat, for eczematous eruptions and in removing freckles and acne. Its ointment is used for closing wounds. An *ointment* composed of Oxide of lead 3, *Rasakapur* 1, *Jhau* or *padvasa* (Tamarix Orient) 2, Simple oil 5 and wax 5 parts is a useful application to syphilitic chancres. Its plaster

called *lead plaster* or Litharge plaster, is used to prevent bed sores, as a protective to wounds and ulcers, and as an application to keep the dislodged parts in *situ* and also to relieve pain from the inflamed parts.

32. Plumbi Oxidum Rubrum (*Sans.*—Raktanag; Sindura; Naga Sambhava. *Eng.*—Red lead; Minium. *Arab.*—Isrenj. *Pers.*—Suranj sang. *Hind.*—Ingur. *Ben. Guz. Duk. Mah.* and *Kon.*—Sendhur. *Can.*—Shindhura. *Tam.*—Sagappusinduram. *Tel.*—Yerrasenduramu. *Mal.*—Chinturam; Galang-gam. *Burm.*—H'sang) is obtained by heating oxide of lead to a very high temperature. It is bright orange-red, granular, crystalline powder. On applying more heat it becomes redder than purple and finally black. It is a local stimulant, used as *ointment* or *liniment* in eruptive skin diseases as eczema' pustular eruptions etc; to promote maturation of boils and abscesses, and the healing processes in all kinds of ulcers and wounds. An *ointment* made of *Sindura* and powdered black pepper with butter is applied in chronic eczema. An oil called *Sinduradyataila* (Chakra) made up of mustard oil one seer, water four seers, *sindura* 4 tolas and cumin seed 8 tolas, boiled together in the usual way, is used in eczema and other eruptive skin diseases. The *powder* is used sometimes as a fumigation in syphilis. *Rajmrigank Rasa* which is used in phthisis and chronic bronchitis, contains *sindura* together with some other minerals as gold, arsenic, copper and sulphur.

33. Plumbi Sulphuretum (*Sans*—Anjana; Sauviranjana; Krishna surma. *Eng.*—Galena; Sulphide of Lead. *Pers.*—Anjana. *Arab. Hind. Ben.* & other Vern:—(Surma) is said to be obtained from the mountains of

Sauvira, a country along the Indus, whence it derives its name. The Sulphide of Lead ore occurs in cubic masses destitute of rays and is tabular in its crystalline arrangement, *Srotonjana* or *suffed surma* (white surma) is said to be produced in the bed of Jamuna and other rivers. It, like the black *surma* or *sauvir anjana* is used as a collyrium for the eyes, but is considered inferior to the black surma or galena. *Sauviranjana* or galena is used as a cosmetic for the eyes and is supposed to strengthen these organs, improve their appearance and preserve them from disease. It enters into the composition of some collyria for eye diseases. Galena heated over a fire and cooled in a decoction of the three myrobalans for seven times in succession is rubbed with human milk and used in various eye diseases—(Sharangadhara). Another preparation recommended by the same is made up of purified and melted lead and mercury 1 part each, galena two parts; rubbed well and reduced to powder, to which is added and mixed intimately camphor 1/10th in weight of the mass. This preparation is said to be useful in eye diseases. *Sticks* made of *surma*, camphor, *triphala* mixed together in juice of Eclipta Prostata, Eugenia Jambolana and Citrus Limonum and dried and made into sticks or probes are used as an application inside the lids in ophthalmia. *Pessaries* of suitable sizes are made of equal parts of sulphide of lead, rose petals, olibanum, alum, borax, galls and gum arabic, for use as astringent pessary.

34. Potassium Carbonas Impura (*Sans.*—Yavakshara; Darulawana. *Eng.*—Impure carbonate of

Potash ; Salt of Tartar; Pearl Ash. *Arab.* & *Hind.*—Javakhar; Khar. *Duk.*—Jhas-ka-namak. *Guz.*—Kharo. *Mah.*—Jhadichamitha. *Kon.*—Papad khar. *Tam.*—Mara uppu ; Sambal-uppu. *Tel.*—Mannu-uppu. *Can.*—Marada-uppu. *Mal.*—Karam; Pappatak-mora-uppu) is found in all the three kingdoms of Nature. In the vegetable kingdom it is found either as carbonate of potash or as potash in combination with other organic acids. Plants absorb it from the soil and when incinerated their ashes give *Yavakshara.* Succulent plants contain a larger proportion of it than the woody parts. In the mineral kingdom it is obtained from rocks where it exists as sulphates, nitrates, carbonates and silicates. It is also found in the felspar of granite. It is obtained by fusing rock-salt. It is an ingredient of various mineral waters. Of the animal kingdom it is an essential constituent. It is found in the milk, flesh and urine of persons who take citrate or tartrate of potassium. It is prepared by reducing to ashes the green spikes of the barley, dissolving the ashes in water, straining the solution through thick cloth and evaporating it over the fire. The resulting salt is a clear amorphous powder with a saline and partly acid taste. Chemically it is carbonate of potash with some impurities. It is described as stomachic, laxative, diuretic, antacid, resolvent and alterative. It is used in urinary diseases, uric acid diathesis, leading to gout and rheumatism, uterine irritability, piles, *shula* (colic), cardialgia, acid eructation dyspepsia, enlargement of lymphatic and secreting glands as the breasts, testicles, mesenteric and scrofulous glands, also of the liver, spleen and salivary glands. A decoction of chebulic myrobalan and *rohitaka* bark (*Amoor rohitaka*)

is given with the addition of Carbonate of potash and long pepper in enlarged spleen and liver and in tumours in the abdomen called *gulma*—(Sharangadhara).—In strangury or painful micturition, carbonate of potash with sugar is considered a very efficacious remedy. Carbonate of Potash is given to persons who are gluttonous in eating and drinking. It is useful in dropsy. In enters into the composition of numerous saline medicines. The following are a few useful simple remedies:—(1) *Yavakshara* 10 grains, leaf-juice of Adhatoda Vasaka 10 drops and clove powder 5 grains, mixed together and given with betel-leaves is useful in bronchitis. (2) A compound powder containing *Yavakshara*, *Saindhava*, dry ginger, each 5 parts, chebulic myrobalan 10 parts, all mixed and powdered is said to be useful in doses of 10 grains, with buttermilk or whey, or *conjee* or hot tea, in cases of piles, dysentery, colic etc. A *modaka* or confection containing powders of *Yavakshara* ½ tola, *trivrit* and *triphala* 1½ tolas each, Baberang seeds and round pepper ½ tola each, mixed well with sugar and ghee or treacle, is administered in required doses as an all-round purgative. It is said to be "very effective in allaying abdominal cysts, pelvic cellulitis, disinclination to food, intestinal worms and many other diseases arising out of the deranged condition of *Kapham* and *Vayu*" (Kamala Kanta Sharma, Jour. Ayur. June 1925). (3) Karabudin Kadri recommends for emphysema a compound pill, containing equal parts of *Yavakshara*, long pepper and dried juice of Calotropis gigentia; made into pills about the size of a pea. Dose is a

one pill four times a day. Locally the solution of carbonate of potash is useful in chronic skin diseases such as lepra, pityriasis, acne, urticaria, and lichen relieving itching etc. Its solution is added to bath to relieve gout and rheumatism and to promote the growth of eruptions, if suppressed, as in measles, small-pox, scarlatina etc. Pundit J. L. Duveji prescribes an external application containing potassium carbonate as a "remedy for plague." It is thus prepared and applied "Mix well Potassium Carbonate in sesame oil and boil till a thick consistency is arrived at. Apply this coating on the affected glands which should be well covered with betel leaves. Heat a bunch of cotton over the fire and apply this over the covered glands repeatedly so as to produce warmth."

35. **Potassium Nitras or Nitricum** (*Sans.*—Saindhava. *Hind. Ben. Punj.* & *Duk.*—Shora. *Eng.*—Saltpetre; Nitre. *Arab.*—Abkar. *Pers.*—Shoraba. *Mah.*—Shora mitha. *Guz.*—Shorakhar. *Tel.*—Patlu-uppoo; Chitloo-Bhusmoo. *Tam.* & *Kon.*—Sindurlavan. *Can.*—Patluppu; Sendur lavana. *Mal.*—Vetiuppa. *Cing.*—Potlunu. *Malay.*—Sundawa. *Burm.*—Yandzeing) occurs naturally as an efflorescence in many parts of the Punjaub. It is obtained by evaporation from water in which had been thrown earth containing the crude salt. It is refined by further boiling and evaporation. It is also obtained from collections of the saline earth after the rains, from the land inundated during the rains and from mud heaps, mud buildings, and other places on which it is formed and then subjected to a process of solution and filtration through a crude mud filter. The impure nitre is known as *dhoah*

and contains about 45 to 75 per cent of the actual salt, the remainder being sulphate and chloride of sodium and insoluble matter. It is again dissolved and crystallized before it is sent, under the name of *Shora Kalmi* (refined) to the bazaars for sale while it is further re-crystallized in Calcutta and elsewhere before being sold for use. Potassium nitrate in solution is a refrigerant, efficient diuretic and diaphoretic. It acts on the vascular system and thus reduces the frequency of the pulse. Given in the solid form or in concentrated solution it acts as irritant. In weak *solutions*, 1 to 2 drachms in a quart of thin warm rice *conjee* it is an excellent refrigerant drink in fevers with hot and dry skin, parched tongue, with great thirst and scanty and high-coloured urine. It may also be sweetened with honey or sugarcandy; or tamarind or lime juice may be added to improve the flavour if desired. It is useful also in the early stages of dropsy, in cases of small-pox, measles, influenza, catarrh, gonorrhoea, acute rheumatism, bleeding from the lungs, stomach, uterus or other internal organs attended by fever. In colic, a *powder* containing nitre, black pepper and *sanchala* salt in equal parts is recommended to be given in doses of 10 grains in lime-juice, and in bronchitis in children above 5 years a powder composed of nitre 5, sulphate of iron, ammonium chloride and sulphur 4 parts each is recommended to be given. Dose is 1 grain—(Khory). A compound preparation known as *Laghu Sankha Dravakam*, which smells strongly of nitrous fumes and which is made of country nitre 6 *palams*, alum 4 *palams*, *Yavakshara*, Ammonium chloride, borax, and vit salt 2 *palams* each and *gandhaka vadiuppu* (a nitre variety), soda

carbonas, ferrous sulphate, copper sulphate and black salt (*Suvarchala-uppu*) 1 *palam* each, all powdered and distilled, is recommended for the relief of all liver complaints, by Ayurvedic physicians. This was tested by Dr. Koman and he says.—"In one of my cases (cirrhosis of the liver with ascites) which is under treatment from 14th August 1918, it is doing some good, as the patient had to be tapped only once five weeks ago, and very little fluid has accumulated since then"—(Ind. Drugs Report, Madras, Dec, 1918). In gonorrhoea a mixture of nitre 10 grains in a wine-glassful of decoction of Abelmoschus Esculantus twice or thrice a day is a nice remedy. Zad-Garib recommends a *powder* made of equal parts of saltpetre, cardamoms, cubebs, soap-stone, olibanum and Curcuma longa. Dose is 3 *mashas* or 35 grains three times a day. A mixture of nitre 2 parts and leaf-juice of the Radish 1 part is given in doses of 30 grains to relieve scalding and retention of urine, also suppression or scantiness of urine. A *confection* made of nitre 5, cinnamon 4, chebulic myrobalan and Iris pseudocorus, each 3, cardamoms 5 and sugar 20 parts is used in chronic gonorrhoea and gleet. Dose is 1 drachm. In obstinate cases of leucorrhoea a combination of nitre 10 grains and alum 5 grains is recommended to be taken thrice daily. It may be advantageously given with infusion of Moringa root. In the early stages of inflammatory sore-throat, a small piece of nitre allowed to dissolve slowly in the mouth is a successful popular remedy. In asthma, in chronic bronchitis and other spasmodic coughs, inhalation of the fumes of burning nitre papers, previously

soaked in saturated solution of the nitrate and dried (sometimes combined with *Datura* and other drugs) gives great relief. For this purpose, pieces of moderately thick blotting paper are used. Whenever an attack threatens, one or if necessary, two pieces of this paper, are burnt in the patient's bed-room so that the fumes may be freely inhaled, preferably at bed time, care being taken to prevent the escape of the fumes; but it should not be held too near the face or the fumes may prove too irritating, and increase rather than diminish the symptoms. *Solution* of Nitre is a good topical application for bruises and abrasions and for the cure of freckles. Locally nitre is employed for the relief of headache and delirium in fevers in the form of a cold and agreeable *lotion* for the head, made by dissolving two ounces each of nitre and sal ammoniac in a big bottle full of water; this is applied by constant relays of freshly-wetted clothes. In acute rheumatism, a strong solution of nitre (three ounces to a pint of water) forms a more soothing application to the swollen and painful joints; cloths saturated with it should be kept constantly applied; the ease which it affords is often very great. Also internally it may be given in doses of 40 grains gradually increased to 60, 90, up to 120 grains twice daily, the vehicle being half a pint of warm rice *conjee*. The quantity of nitre may be diminished as the severity of the symptoms subsides.

36. SILICIUM (*Eng* :—Silicon).

Source:—Found in Nature as Silicon dioxide in rocks, crystals, sand, flint, quartz, agate aad various other stones, and in earths and clay ; also as Silicates in baysalt, felspar, granite, mica, porphyry etc.

Manufacture.—Heat together fluoride of potassium and silicon with its equal weight of metallic potassium. Throw the fused mass into cold water, when silicon will be left behind.

Characters.—Crystal or amorphous, dry brown powder, non-fusible, insoluble and non-volatile. Heated in the air, it becomes converted into silica. It is not used in medicine either externally or internally.

Silicate of Alumina (Felspar or Clay)—See Aluminii Silicas.

37. Silicate of Alumina, Lime & Oxide of Iron (*Ben. & Hind.*—Gil. *Ind. Bazaar*.—Gil-i-abrorshi ; Gil-e-far ; Hasan dhup) is a variety of clay, existing in amorphous irregular masses of a yellow colour of some-what astringent taste and of smell resembling that of *Multani mati*. It is found in the deposit from mineral springs containing sulphur. Its action and uses are similar to those of *Multani mati*. It is used as a paint (*Tilaka*) for the forehead.

38. Silicate of Alumina, Magnesia & Oxide of Iron (*Eng.*—Armenian Bole. *Pers.*—Gile-armani. *Arab.*—Tene armani ; Hajrarmani. *Punj.*—Harmazi. *Hind.*—Gherumitti. *Mah.*—Phula-geru. *Tam.*—Sime kavikallu. *Tel.*—Sima kavirai) is a calcareous mineral often made into small cakes and stamped with certain impressions. It is usually prepared by mixing pipe clay or common chalk

with oxide of iron or red ochre. It occurs in powder or irregular pieces of a reddish brown or variegated colours. It is soft and somewhat heavy. On section it is granular and sprinkled with white particles, and the cut portion resembles a piece of rhubarb. When exposed to the air, it absorbs moisture very rapidly. If thrown into water it readily crumbles into atoms. When put into the mouth it sticks firmly to the tongue. In action it is refrigerant, astringent, absorbent and antiseptic. It is used as a *powder* or *paste*. Dose is 5 to 30 grains. Internally the *powder* with cream is given in advanced cases of dysentery. A *paste* made of it 2 parts, alum 4 and rose water 10 parts is given internally in scalding in the urine. *Externally* a paste of it is applied to inflamed and swollen glands, also to ulcers and raw surfaces. A paste of it and *Kalijiri* (Vernonia Anthelmintica) equal parts with a sufficient quantity of *Subja-no-rasa* (Cannabis Sativa) makes a useful application to glandular swellings. *Gopichandan* and *Multani mati* (*Eng.*—Fuller's Earth. *Pers.*—Gil. *Tam.* & *Tel.*—Gope) are both varieties of Armenian Bole.

39. Silicate of Alumina & Oxide of Iron (*Eng.*—Bole Rubra; Red Earth; Ruddle or Red Ochre. *Pers.*—Gile-surkh. *Arab.*—Magrahai. *Sans.*—Gairika; Rakanpashana. *Hind.*—Gerumati. *Mah.*—Geru. *Tam. Tel.* & *Guz.*—Sona-geru; Hiringi powdee), is a clay found in lead and iron ore and contains an excess of oxide of iron over any other clay. There are two varieties:—bole (yellow) and red ochre. The red ochre contains more iron than the bole and is used in medicine. It sometimes occurs in powder and sometimes as hard pieces. It rapidly absorbs

water if poured upon it. It is purified by being soaked in milk seven times and is described as sweetish, astringent, cooling, useful as a local application to burns, ulcers, boils, pustular eruptions and aphthous sores about the mouth. It is rarely used internally except as an ingredient of some compound preparations containing a large number of mineral drugs, for instance *Jvarakunjara paridra rasa* which contains nearly all the mineral substances. Besides *gairika* several other varieties of earth are occasionally used in medicine; *e. g.*—a sweet scented earth brought from Surat and called *Saurastra Mrittika* is regarded as astringent and useful in haemorrhages. It enters into the composition of several medicines for relieving bleeding from internal organs.

40. Silicate of Lime (*Eng.*—Fossil encriuite. *Pers.*—Sang-e-yahuda. *Hind* & *Bom.*—Hijrata Hau) is a fossil stone occurring as a petrified, oblong, obtusely pointed fruit, sometimes with a stalk. It is about ½ to 1½ inches long. The surface is ribbed longitudinally; each rib is tuberculated. Externally the colour is dirty-grey traversed with dark brown furrows, aud greenish white within. A *paste* of it is prepared by pouring boiling water on the stone and allowing the mass to cool. A *bhasma* is prepared by braying the stone in lime-juice and incinerating. It is considered to be cooling and demulcent and given in gonorrhoea with benefit. As a drink it is useful to check vomiting. A paste made of the *bhasma* brayed in lime juice is a useful application to vesicular eruptions in children, to itch, ringworm etc. *Sang-e-Sira Mahi* is also a Silicate of lime, a variety of lime stone, resembling in colour, form and appearance, human incisor teeth. Exter-

nally it is shining, glabrous and of a brownish white colour, biconvex and broad at one end and obtuse at the other. The action and uses are similar to those of *Sang-e-Isama* which is the Silicate and Sulphate of lime. It is a kind of marble, of various sizes, of a dark brown color, polished smooth and mottled with light-red spots; when cut into, the interior is of a deep grey colour and looks as if sprinkled with particles of mica. Brayed in water it is used as a diuretic and lithontriptic; it is given in retention of urine and in diseases of the urinary organs. Externally it is applied as a cure for itch and other chronic skin diseases.

41. **Silicate of Magnesia** (*Eng.*—Soap stone. *Pers. & Hind.*—Singe jerahata. *Mah.*—Shankha jiri. *Guz.*—Sankha jirun. *Can.*—Veesaj. *Tam.*—Bulpam) occurs in brownish-white or grey flat irregular pieces or thick masses, smooth and unctuous to the touch, appearing like a soap. It is insoluble in water, tasteless, easily pulverizable, yielding a soft slippery powder. On section the cut surface is silvery, shining and granular. In action it is a powerful astringent, dessicant and styptic. Dose is 5 to 20 grains. With milk, cream or brown sugar it is used internally in dysentery, diarrhoea, menorrhagia and leucorrhoea. A compound powder made up of the soap-stone and *Vansalavana* (Silicious concretions of bamboo) 5 parts each, cubebs and cardamoms 4 parts each, is used in gonorrhoea, dysentery, menorrhagia etc., in doses of 10 to 15 grains. *Locally* it is applied to syphilitic sores and ulcers; also check bleeding from the nose and wounds. A compound *ointment* made of *Sankhajirun* 5, asafoetida and oxide of lead, each 2 parts, *Kamala* 3, neem leaves 4, wax

and simple oil each 10 parts, is useful for foul ulcers, chancres etc. A *paste* of it is applied with whey to burns and scalds with benefit. A paste made of it with catechu (5 to 1 part respectively) with the addition of sufficient ghee is a useful application in syphilitic ulcers and sores.

42. Silicate of Magnesia & Iron (*Sans.*—Gorochana. *Eng.*—Bezoar stone; Mineral stone; Serpent stone. *Pers.*—Padzahre-kani. *Arab.*—Faduj madani or Badzahra; Hazr-ul-bahr. *Hind.*—Pedaru bazara. *Duk.*—Kani-pas-zehar. *Bom.*—Pouzera Madani. *Guz.*—Zera Mohra. *Cing.*—Visagul. *Tam.*—Visha kallu; Pamu kallu. *Tel.*—Geruda-petsaprai) is a variety of soap stone occurring in very irregular and angular pieces of light yellow colour of various shapes and sizes, it resembles pieces of marble or tamarind stone. The surface is generally rough. The taste is astringent. The smell resembles that of pipe clay. In action it is a nervine tonic, deobstruent and astringent. Dose is 1 to 2 grains. It is used in cholera, obstinate vomiting, diarrhoea in children and in profuse or troublesome and painful menstruation. A *paste* of it is used as a gargle in salivation. With Terminalia Chebula its paste is applied to the mouth of children in stomatitis.

Silico-Fluoride of Sodium.—See under Sodium.

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43. SALINE SUBSTANCES.

Saline substances include Salts and Saline earths. There are two varieties of salts used in Medicine:—(*a*) Those which exist in Nature and are known as natural salts and (*b*) those which are artificially prepared. The natural salts are:—(1) *Saindhava;* (2) *Samudra*

lavana; (3) *Sambhar*. Susruta describes the following varieties of salts *viz.*, (1) *Saindhava*; (2) *Samudra*; (3) *Vit* or *Vid lavana*, (4) *Sauvarchala*; (5) *Romaka*; (6) *Audbhid*; (7) *Gutika*; (8) *Pansuja* also called *Ushasuta*. The first five pass by the name of *Pancha lavana* or the five salts and are often used in combination. *Pancha lavana* is a carminative, laxative stomachic, tonic, given in colic, indigestion and enlargement of the liver and spleen. It is made up of *Saindhava* 1, *Samudra* 2, *Sambara* 3, *Sanchal* 4, and *Vid lavana* 5 parts. The other varieties of salts are rarely used in medicine. *Audbhid lavana* is a name applied to *Shora* or salt-petre.

Saindhava literally means produced in Sindh, or the country along the Indus. The term is applied to rock salt which is regarded as the best of salts. Three varieties of rock salt are recognized, *viz.*, white, red and crystalline. The pure white crystalline salt is preferred for medicinal use. For alimentary purposes also, rock salt is considered superior to the other varieties.

Samudra literally means produced from the sea. The term is applied to sun-dried sea-salt, which is called *karkach*. Orthodox people consider common salt as impure owing to its having undergone the process of boiling, and who take only rock salt, substitute *karkach* for rock salt, if the latter is not available. Sun-dried sea-salt is described as somewhat bitter and laxative. In other respects its properties are said to resemble those of rock salt.

Vit lavana is an artificially prepared salt occurring in dark-red shining granules. It is also called *Sanchal* or black salt (*Sans.*—Krishna lavana. *Ben.*—Kale nun. *Hind.*—Padelon. *Mah.*—Kalomith). It has a mild, saline

and somewhat nauseous taste. It is manufactured thus.—56 lbs. of sambar salt are mixed with 20 ounces of dried emblic myrobalans ; ¼ of these materials is put into a round earthen pot with a narrow mouth, which is put in a fire-place made of clay. The fire-place has a hole at the bottom for introducing the firewood. After the fire has been lighted about an hour, and the materials in the pot appear to be heated, the rest of the materials are added by degrees. The whole is then exposed to a strong red heat for about 6 hours. The fire is then allowed to die away, and the pot to cool ; which upon being broken is found to contain about 48 lbs. of *Vitlavan. Vitlavana,* besides possessing the properties of salts in general, is said to be carminative, aperient, tonic and stomachic, and to be useful in enlarged spleen and liver, flatulence, colic, dyspepsia, indigestion, bowel complaints, etc.

Sauvarchala (*Hind.*—Sonchal ; Kalanimak. *Bom.* & *Mah.*—Soratimati. Can.—Turarimannu. *Ben.*—Saurastra-mruttika) is said to be aromatic, agreeable and digestive and useful in the same sort of cases as *vitlavana.* It is described as "a dark colored salt said to be made by dissolving common salt in a solution of "sajimati" (crude soda) and evaporating it ; this salt contains chloride of sodium, sulphate of soda, caustic soda but no carbonate of soda". It is said to be "stomachic, digestive, purgative demulcent, bilious and beneficial in *Sula*, abdominal tumours, intestinal worms and dysentery"—(N. N. Sen Gupta).

Romaka, also called *Sakambari, Sambharnuna* or *Godalavan,* is the salt produced from the Sambar Lake near Ajmere. It is called *Vadagru mithu* in Bombay,

Savara mith in Hindi, *Sambar luna* or *mitha* in Mahratti. The name *Romaka* is said to be derived from a river called Ruma. It is obtained by the evaporation of salt water from the river in the shape of clear rhomboidal crystals like alum. It has a pungent taste, and is considered laxative and diuretic, in addition to possessing the other properties of salts. It is said to be the best and purest of evaporated salts.

Audbhid (*Vern.*—Reha; Kalar) is produced of itself from the earth, as an efflorescence on reh lands. It consists principally of sulphate of soda with a little chloride of sodium, and is described as alkaline, bitter, pungent and nauseating. It is said to be so abundant in some parts of the Punjab as to render the soil quite barreu. Some physicians or rather writers substitute this article for sambar salt in the composition of *pancha lavana* or the five salts.

Gutika salt, mentioned by Susruta and some later writers, cannot be identified at present. The name *gutika* is said to be derived from the circumstance of the salt assuming a hard, granular or nodular shape from boiling; so that it is a sort of boiled salt. Susruta describes it as stomachic, digestive and laxative.

Pansuja or *Ushasuta* literally means, salt manufactured from saline earth. *Panga* or common salt, manufactured from earth impregnated with salt water, would come under this head, It is said to be "demulcent, stimulant, stomachic, generative of digestive fire, laxative bilious and productive of burning"—(N. N, Sen Gupta).

The saline earths include:—(1) *Javakhara* (Potash Carbonate impure;) (2) *Navasagara* (Ammonium Chloride);

(3) *Papadkhar* (Pearl Ash); (4) *Sajikhara* (Carbonate of soda); (5) *Shorakhar* (Saltpetre); (6) *Tankan khar* (Borax).

44. SODA CARBONAS IMPURA.

Sans.—Sarjikakshara. *Eng.*—Dhobi's earth; Salsoda; Barilla. *Pers.*—Shikhara; Tine-gazur. *Arab.*—Tile-milahul-gile. *Hind. Guz. Mah.* & *Kon.*—Sajjikhar. *Duk.*—Cour-ka-namak; Sajjinoon. *Tel.*—Savite-mannuppu. *Tam.*—Choontoo-munnoo; Sanchhikaram.

There are three varieties of Carbonate of Soda, each known by its peculiar characters. These are:—1. *Sajjikhar* or Barilla; 2. *Sajjikhar-naphul* or Washing Soda; 3. *Bangada-khara* or very impure carbonate of soda, which contains a large quantity of Silica. All these varieties are found in the ashes of Chenopodiaceous plants, a species of salt worts growing near the sea.

Source.—Obtained from the ashes of Chenopodiaceous plants; from kelp or barilla by incinerating sea-weeds, from Dhobi's earth by adding quick lime to the earth, and boiling repeatedly with water. It contains 25 p.c., of Sodium carbonate. Sodium carbonate (washing soda) is obtained by lixiviation and crystallization of barilla.

Characters.—It occurs in porous, granular masses, of a greyish white color or as heavy hard pieces, with a strong alkaline taste of soda. Chemically it consists of carbonate of soda with certain impurities such as organic matter, sulphate of soda, potash etc.

Action.—It is antacid and alterative; also a diuretic. The properties are generally like those of *Yavakshara*, but inferior to it.

Uses.—It is useful in dyspepsia with vomiting, diarrhoea and flatulence. It is an efficient remedy in urinary diseases, as uric acid gravel and suppression of urine. In Bright's disease of the kidney with abundant sediment in the urine ; and in diabetes the habitual use of this salt has a marked beneficial effect. In rheumatism and gout *Sajjikhar* is given internally with benefit. A powder known as *Sajjikadya Churna* made up of *Sarjikshara* and *Yavakshara* and *Pancha lavana* all equal parts, powdered and soaked in lemon-juice or the juice of pomegranate fruits and dried in the sun, is said to cure dyspepsia with severe pain after meals, ascites and loss of appetite. Dose is 20 grains—(Sharangadhara). A powder made of *Sarjikakshara* and *Yavakshara* 5 parts each, dry ginger and *Sanchala* 4 parts each and *pipli* 3 parts is given in hot tea in colic, indigestion etc. In amenorrhoea a *paste* made in milk of equal parts of *Sajjikhar*, *nayaphataki pana* (Heart pea), sweet flag and *Asana* is useful. Dose is 1 drachm. It is used in the form of a bath in lichen, prurigo lepra and pityriasis; also in burns of the second and third degree. In herpes of the scalp and in scaly diseases of the skin it is an efficient topical remedy. A saturated solution of it is applied to burns and scalds, also to rheumatic joints. A crystal of soda dipped into water and then gently applied to the burnt spot gives instantaneous relief of pain in burns of the first degree. In those of the 2nd and 3rd degree, a compress wet with a 10 p.c. solution of the soda may be applied. A week solution of it is injected into the vagina to check leucorrhoea. A paste made of equal parts of *Yavakshara* and *Sajjikhara* with water is applied to

abscesses for opening them and for the removal of local inflammation. An ointment made of *Sajjikhar*, slaked lime and seeds of Psoralea Corylilfolia each 4 parts and copper sulphate 1 part and ghee 4 parts is useful in itch.

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45. SODII BIBORAS.

Sans.—Tankana ; Rasashodhan. *Eng.*—Borax ; Biborate of Sodium. *Hind.*—Tinkal, *Ben. Duk. & Punj*—Sohaga. *Cash.*—Vavut, *Arab.*—Buraekes-saghah, *Pers.*—Tinkar. *Thibetan.*—Chusal, *Bom.* & *Guz'*—Tankan-khar. *Kon.* & *Mah.*—Kankankhar, *Tel.*—Velligaram, *Tam*—Venharam. *Can.*—Biligara, *Mal.*—Ponkaram, *Cing.*—Pushara, *Burm.*—Lakhiya, *Malay.*—Pijar; Palleri.

Source.—It occurs in Nature. Crude borax is found in masses by evaporation of water, on shores of lakes in Thibet and also in crystals; it is also obtained from the mud of lakes sorrounded by hills in Nepal. In this crude state it is known as *Sohagoor* or *tinkala*. When purified by dissolving, evaporating and crystallizing, it is called borax or *tankan khar*.

Characters.—It is composed of boric acid and soda. In the native state it exists as an impure saline incrustation of a dirty-white colour. It exists as crystalline tough masses or in the form of translucent irregular masses. Exposed to the air it becomes opaque. Another variety known as *Telio tankana khar* is an impure salt met with in small pieces or smooth, translucent six-sided prisms. The colour is greyish white ; on exposure it becomes opaque or dirty white, It has a faintly balsamic odour and tastes like *papada khar*. This is the variety which is generally used by gold and silversmiths.

Purification.—Borax is purified for medicinal use by being steeped for a night in *Kanjika* (whey) and dried in the sun.

Action.—Diuretic, emmenagogue, astringent, antacid and local sedative and antiseptic.

Uses.—Medicinally borax is given internally in acidity of the stomach, amenorrhoea, dysmenorrhœa, menorrhagia, puerperal convulsions and to promote uterine pains during labour. As a solvent it is given in uric acid diathesis with good results. Dose is from 20 to 40 grains for an adult. In the *Kaphaja* type of fevers a pill called *Kapha-ketu Rasa* made of aconite, borax and reduced conch-shell in equal parts, powdered, mixed well and soaked over three times in the juice of fresh ginger and made into pills of two grains each is given with honey and ginger-juice. This is used in all sorts of phlegmatic complaints from common catarrh to bronchitis and pneumonia even attended with discharges from the ears and the nose. In prolonged and tedious labours due to want of action or power in the uterus to expel the foetus, and in abortion under the same circumstances, 30 grains of borax with 10 grains of powdered cinnamon in a little warm *conjee* may be given every one or two hours to the extent of three or four doses. This may also be given in convulsions attendant on labour. In cases of suspension or irregularity of the menstrual discharge and in some chronic uterine affections, doses of 10 grains with 10 grains of cinnamon occasionally prove useful. It acts with betel-juice in 4 to 8 grain doses as preventive of ague. In small doses it is given to children as a laxative. It is also used in loss of

appetite, painful dyspepsia, cough, asthma and diarrhoea. As an antiseptic it destroys low vegetable organisms, hence given in foetid stools of diarrhoea in children. As a sedative to the mucous membranes in irritable condition of the fauces and pharynx, in chronic bronchitis of children, in cystitis etc, it is given with benefit. A few grains of borax or boric acid will sometimes remove an obstinate cough in a young child, and especially if this be associated with an irritable condition of the fauces or pharynx—(Judson). Glycerine of borax in 10 to 20 drop-doses is very beneficial in the treatment of summer diarrhoea of infants. It checks the griping pains, deodorises the offensive motions, and stops the diarrhoea (Dr. E. A. Sympson). It is used by Hakims and Vaids in the convulsions of infants and children, in doses of 1 to 5 grains, according to the age of the child when given in mother's milk. Five grains of borax and three grains of pepper with a teaspoonful of honey, given thrice a day is very effective for bronchitis and asthma in adults; for children the dose is proportionate to their age. Five grains of borax eaten with betel leaves has been found to be effective in impotence. Five-grain doses with treacle has been employed as a deobstruent in internal tumours of the abdomen. In epilepsy it is useful where bromides have no effect. Dr. Gowars has found borax useful in some cases of inveterate epilepsy in which bromide has no influence; but that the influence of borax is not comparable to that of bromides in cases in which this is effective. He says that the administration of the drug may be continued for years in doses of 15 to 30 grains thrice a day after meals, without any ill effects beyond a possible eruption of

psoriasis amenable to arsenic. Gastro-intestinal disturbance usually occurs at the beginning of the treatment, but diminution of the dose is said to be all that is necessary to correct this. Borax enters into the composition of numerous formulae for dyspepsia, loss of appetite and indigestion, such as the *Amritakalpa rasa*, *Tankanadi Vati* etc. *Amritakalpa rasa* is prepared thus:—Take of mercury, sulphur and aconite, one part each, borax three parts, soak them for three days in the juice of Wedelia calendulacea and make into two-grain pills. *Tankanadi vati* contains the above ingredients with the addition of ginger and black pepper, all in equal parts. Another pill composed of borax, nitre, asafoetida, *Kantham*, (magnetic oxide of iron), purified iron pyrites, opium, garlic, kernel of bonduc seeds, all in equal parts powdered, ground in ginger-juice and turned into 2 or 2½ grain pills, is given in painful dyspepsia; a laxative of *triphalā* should be given. A mixture of equal parts of borax, long pepper and baberang seeds is given for five days at the menstrual periods for the purpose of preventing conception. It is also used for procuring abortion and inducing labour pains. The following are some useful preparations containing borax:—(1) Take of borax, aconite, Aplotaxis auriculata, alum, long pepper, embelia ribes, cloves, nutmeg and Helleborus niger. Mix and make a pill mass in honey. Dose is 2 to 5 grains, given with betel leaves, in cough. (2) Take of Borax, impure carbonate of potash, *trikatu*, *triphala*, Curcuma longa, *pancha lavana*, Cassia lanceolata powder, Embelia ribes and Aconitum heterophyllum equal parts and Balsamodendron mukul equal in weight to all. Mix and

make a pill mass. Dose is 3 to 5 grains, given in milk or *Conjee*; useful in gonorrhoea, rheumatism, heart disease, epilepsy, hysteria etc. (3) Take of Borax 4, Pinus longifolia 3, black pepper 2, Anacyclus pyrethrum 2, Datura seeds 3 and aconite 2 parts. Mix, add honey and make a pill mass. Dose is 5 grains, to be given in the juice of betel leaves, for asthma. (4) Take of Borax 2, *triphala*, dry ginger, long pepper, coriander seeds, cumin seeds, *sanchala* salt, each 1 part, cinnabar, Ferri peroxidum, sulphur, and black pepper each 2 parts and honey 5 parts. Mix and make a pill mass. Dose is 5 grains. Used in chronic bronchitis with profuse expectoration.

Externally borax is used in lotion (1 in 40 of water) in acne, freckles, cloasma etc., to allay itching in urticaria, psoriasis, pruritus pudendi, vulvi, scroti and ani, in gangrenous buboes and sloughing ulcers. It is applied on rags well over the whole sore and renewed frequently by night and day. For dressing Delhi sores and other forms of ulcers, and for stimulating them to healthy action a favourite application is an *ointment* made of a mixture of borax, sulphur and catechu, one drachm each in fine powder and an ounce of ghee. To sore nipples a *solution* of borax (1 in 8) is applied before and after sucking the infant; or it may be employed in the form of ointment 1 in 8 of ghee. These applications are also serviceable in inflamed and painful piles. In the distressing irritation of the genital organs both in males and females, cloths saturated with a strong solution of borax (1 in 16) kept to the parts afford much relief. In the case of women the solution should be used in the form of vaginal injection. The solution (1 in 5) proves

very useful as injection in cystitis, leucorrhoea and gonorrhoea and in lithic acid deposits. In the treatment of vaginal leucorrhoea Rosch deposits in the fornix 0·5 gm. (7 or 8 grains) of boric acid at first daily and then three times a week. The course of treatment lasts from one to three weeks. For ringworm a solution of borax in distilled vinegar (1 in 16) is said to be an effectual application. In aphthae or thrush and soreness of mouth or throat to parasitic stomatitis, to the urethra in urethritis, to cracked tongue, a mixture of one drachm of powdered borax and one ounce of honey is an excellent application, especially suitable to infants and young children; for this the official *Mel Boracis* and *Glycerinum Boracis* are efficient substitutes. It should be applied with the finger to the spot twice or thrice daily. In hoarseness of the throat to which songsters are liable it is locally applied with benefit. In fissures or cracks in the tongue in adults, which occur in the advanced stages of consumption, fever, etc., an application twice the strength of the above proves highly serviceable. In mercurial salivation a solution of borax (1 in 16 of water) makes an excellent *gargle*. As a resolvant of enlarged glands and tumours, a *paste* made of equal parts of borax, alum and milk-curd is applied. *Boro-glycerine* (1 in 45) is useful as an antiseptic lotion in purulent ophthalmia and diphtheria.

46. **Sodii Fluosilicas** (Sodium Fluosilicate or Silic-fluoride of Sodium) occurs in crystals or white granular powder without any odour or taste, soluble in water. In action it is non-irritant, disinfectant, antiseptic, germicide, deodorant and styptic. As an *injection* (2 p.c.) it is used in gonorrhoea; as a *mouth-wash* or gargle

in diphtheria and sore-throat; as a *solution* for carious teeth, wounds and for irrigating abscess and other cavities.

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47. SODIUM CHLORIDE IMPURA.

Sans.—Saindhava. *Eng.*—Rock-salt; Bay salt. *Arab.*—Mil-he-tabazard. *Pers.*—Namakc-sang. *Hind.*—Sendhalon. *Duk.*—Sondanimak. *Gus:*—Sindhaluna. *Tel.*—Saindhalavanam. *Tam.*—Indu-uppu. *Can. Kon.* & *Mah.*—Sendhur-lavana *Mal:*—Intu-uppu.

Source.—Found in Nature in extensive beds mostly associated with clay and calcium sulphate. To obtain it holes are dug into these rocks which soon become filled up with salt water; the water is evaporated and the salt is left ready for use.

Characters.—It is found in small white crystalline grains or transparent cubes. It is brownish white externally and white internally. It has a pure saline taste and burns with a yellow flame.

Action.—In small and medicinal doses it is highly carminative, stomachic and digestive. It promotes the appetite and assists digestion and assimilation. In large doses (1 to 2 drachms) it is cathartic; in still larger doses (4 to 8 drachms) it is emetic. Rock salt is said to possess stronger purgative properties than cream of tartar; but like this it is not a satisfactory cathartic given alone. Combined with other purgatives it is equal, if not superior to it.

Uses.—It is given in dyspepsia and other abdominal disorders. When heated it is used to foment painful, swollen and such other parts. Rock salt with warm

water is used as an emetic. A compound powder called *Vadavanal churna* containing rock salt, long pepper, *pipli*, cubebs, *chitrak*, ginger, and myrobalans in equal parts, mixed and made into a powder is used in anorexia, flatulence and biliousness. Dose is 5 to 15 grains two or three times a day with water. A medicinal salt called *Narikelakshara* is highly recommended in Chakradatta as valuable in the form of dyspepsia which is attended with pain two or three hours after meals. It is thus prepared:—Take a cocoanut-fruit full of water, make a hole in it and fill the cocoanut with rock-salt and dissolve it in its water. Then close the opening, cover the nut with a layer of clay and roast it in a pit of fire. The salt thus roasted is given with the addition of long pepper. Dose is about a quarter tola. A *powder* made of rock salt 10 grains, *Kaladana* 1 drachm & dry ginger 10 grains is a good laxative, in a single dose. As a digestive, a *compound powder* made of rock salt, chebulic myrobalan, emblic myrobalan and long pepper in equal parts is recommended in doses of 10 grains twice a day. A powder containing *pancha lavana* 5 parts, *Mandura* (impure oxide of iron) 5 parts and emblic myrobalan 4 parts is useful in doses of 10 grains in dyspepsia, congested liver etc. A medicated oil named *Salpa Masha Taila* is used as an application in rheumatism, contracted knee joint, stiff shoulder joint etc.

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48. SODIUM CHLORIDUM.

Sans.—Lavana; Samudra Lavana; Dronilavana. *Eng.*—Common salt; Table salt; Muriate of Sodium. *Arab.*—Milhuls-aajin. *Pers.*—Namake-khurdam. *Hind.*—Namak; Lun

Nun. *Duk.*—Nimak ; *Ben.*—Nimok; Lesu. *Gus.*—Mithun. *Bom. Mah.* & *Kon.*—Chemit Meeth. *Can.*—Droniuppu. *Tel.* & *Mal.*—Uppu. *Tam.*—Uppol. *Burm.*—Themg-dan-hsa. *Cing.*—Shih-yen ; Lunu.

Source.—Sodium chloride or salt is found in Nature forming 2.5 p.c. of the waters of the ocean. It is obtained by lixiviation of saline soil or by evaporation of brine springs or sea-water. When obtained from sea-water it is known an *Samudra lavana.* In India, though it is lavishly provided by Nature in the wide expanse of sea surrounding the Peninsula and in the numerous salt lakes and marshes its preparation by the people is prohibited ; it is prepared on a limited scale under supervision of Government.

Characters.—Salt occurs as transparent cubes or small brownish-white crystalline grains, odourless, of saline taste and neutral reaction soluble in water, insoluble in alcohol and chloroform.

Action.—Antiseptic, antiperiodic, anthelmintic and deobstruent. Common salt is an ingredient of our body and keeps the globulin of the blood in solution. We are continually losing it through sweat, urine, tears etc., and therefore its want causes disease and even death. It increases the secretion of the gastric juice and should therefore be taken with discretion by the dyspeptic. It should be taken with caution by stout persons, patients with dropsy, and those suffering from excessive thrist and skin diseases. The salt of the sea water is said to contain a small proportion of iodine, which renders it essential for the human being as a preventive of goitre and other glandular enlargements.

Dr. Barclay, President of the British Radiological Society, Manchester, declares (Montreal Pharm. Jour.) that in communities near the sea there are few, if any cases o goitre, and proves his theory from the fact that there is much less goitre in England than in the United States, and that it is extermely common in the middle United States where the people are far from salt water. He thereby proves that goitre is caused by insufficient iodine in the human system. Internally in small doses it increases the secretion of the salivary and gastric glands, sharpens appetite and promotes digestion of vegetable food. It excites thirst and thus assists absorption of liquid food. In a diluted form it enters the blood and dissolves albumins and globulins. In a concentrated form it is an irritant to the cut surfaces to the mucous membranes, muscles and nerves It is also a rubefacient. It decreases the secretion of mucus, promotes absorption of effused products. It is eliminated in the urine. In large doses *i.e.*, 2 to 4 drachms in solution, salt acts as an emetic, and in still larger doses it is a powerful purgative.

Uses.—Being one of the constituents of the blood and of the body generally, it forms an important dietetic agent and is used as a condiment. Swami Lavanananda speaking of salt in its relation to longevity of life mentions eight civilized countries from British Isles and United States down to India and gives the national consumption of salt per head in comparison with their average longevity. He gives 72 and 48 lbs. of salt per head per year in British Isles and U. S. A. respectively, where the average length of life is 45 years, whereas in India it is only 23 years, owing, he says, to the fact

that the average consumption of salt per head per year in India is only 12 lbs. He therefore preaches the value of saline nasal douche and salt-water drink to make us more healthy and the Govt., more wealthy through salt-tax. But in contrast to this view a book recently published by the Theosophical Publishing House, Adyar, Madras, and styled 'Salt—A Superstition' gives copious illustrations and extracts to prove the justification for its total discontinuance as an article of diet. It is mentioned that in Ayurvedic treatment a saltless diet is generally prescribed in diseases such as dropsy and that *Bhagvath Githa* refers to a salted diet as causing 'pain, grief and disease." At any rate excessive and improper use of salt is not commendable. Medicinally in moderate doses it has a tonic effect, observed especially in some cases of convalescence where there is an intense craving for it. In fevers, dyspepsia and bilious diarrhoea in children it is given with benefit. A powder named *Vaishnavanar Churnam*, made up of common salt, *ajowan*, omum seeds, long pepper, ginger and chebulic myrobalan, is useful in doses of 20 to 60 grains twice a day, as gastric stimulant and carminative. For an attack of acute indigestion with difficulty to breathe a very simple remedy is to put a pinch of table salt, dry, on the tongue and while it is dissolving it is acting on the salivary glands so that there is a mouthful of saliva very quickly and when this is swallowed it assists in the digestion of whatever article of food has remained undigested especially starchy foods. A contributor to the "Indian Medical Record" says with regard to the usefulness of salt in typhoid fever etc:—

"This saved my life when recovering from typhoid and I have told many persons of it and they have been helped; it acts better when dry than when dissolved in either hot or cold water and drunk, as then the salivary glands are not excited to activity".—(Health Hints in Indian Medical Record, Nov. 1925). Biochemists in America have found from experiments made, that salt serves the valuable function of reducing uric acid in the blood, especially of those on a diet too rich in either proteins or carbo-hydrates. *Sea water* collected from a depth of five fathoms far out in the Atlantic in sterile drums is being used for curative purposes in disease. It is said co work miracles in anaemia, gastric ulcer, catarrh, neuritis, neurasthenia, and all cases of debility. Experiments are now being made in America by Drs. Leaman & Gibson with some success in the treatment of vomiting with the administration of a 2 p. c. solution of sodium chloride. The relief was immediate, though transient. Also a few cases of duodenal ulcer with nausea and pain after meals, are reported to have been relieved though temporarily by giving a teaspoonful of salt dissolved in a glass of cold water. Dr. Brooke says that common salt is an efficacious remedy in malarial fevers, that only one dose or even two doses of the common salt are required to check an attack of any kind of malarial fever. He suggests the following mode of administration:—"A good handful of clean sodium chloride is first thrown on a well-washed frying pan which is being kept warm by the application of heat from underneath to drive off fully the water of crystallisation contained in the common salt. Such an application of heat is continued until the said salt took the brownish

tint. Dosage:—For adults—one tablespoonful of this roasted salt which is equivalant to one ounce. This amount of salt after being well mixed with one glass of hot water should be taken in an empty stomach in the morning of the day before the date of an attack of fever. In quotidian type of malarial fever, after its remission or its cold stage being removed, it should be taken in an empty stomach. Not more than one ounce should be administered per mouth. But the dose should not be less than one ounce. It would be of no effect if the medicine is not taken in an empty stomach. Consequently, the patient should not be given any food or even water before the medicine is administered. Although the patient becomes very thirsty immediately after the medicine is taken, still he should not be given any other food except water. This water should be slightly warmed and should be drunk at a time in a drachm quantity off and on. If the patient becomes very hungry, he should not be given any other food except light diet *e. g.* chicken broth after 48 hours. Within 24 hours after taking the salt water he should drink only little water off and on, otherwise he would derive no benefit at all. Regarding diet he should be very careful. Further he should remain careful as to cold exposure within 48 hours after the administration of medicine. He should be instructed in such a way that he should wear always a warm coat and stockings. Dr. Brooke in his 18 years' experience in the medical practice did not get baffled in his object of curing patients after following the above principles. He was able to cure each patient by using this roasted salt after

48 hours. None had the relapse of fever. This medicine was rarely used twice in a patient. In Hungary, hundreds of patients are cured by adopting the above procedure. In hot countries of America nearly 400 Englishmen are attacked with malarial fever each year. None had the relapse of fever.—(Practical Medicine, Sept, 1925). As a saline *intravenous injection* or enema it is given during collapse stage after operations and in uterine haemorrhages. In cholera, an intravenous injection of Rogers mixture is useful. It consists of sodium chloride 2 drachms, potassium chloride 6 grains and calcium chloride 4 grains in 1 pint of water. In plague cases accompanied by vomiting and purging Dr. H. C. Sen recommends *hypodermic injection* of normal salt solution. Surgeons make free use of intravenous or subcutaneous injection of salt water in critical times. The same or better result can be obtained by lay people by putting salt water in the body through nose or mouth. Marine-plasma or deep sea-water is used in France to improve the vitality of children. The same can be achieved by salt water drink. It is now admitted that saline *nasal douche* (salt water snuff) prevents influenza. It increases leucocytosis and improves vitality. We can prevent pneumonia and other chest disorders by salt water. It is not a very difficult task to give saline nasal douche to the child. Prepare a cup of salt water by dissolving powdered salt in the proportion of one tola to a seer of water or 6 grains of salt to an ounce of water. Put a few spoons in each nostril and a few in the mouth of the child. Dr. H. C. Sen

recommends administration of tepid normal salt solution freely by the mouth in every case of blood-poisoning or impoverished condition of the blood. He says that if it is not rejected by the stomach, *oral administration* should not be superseded by rectal, hypodermic or intravenous injections. As an *enema* it relieves flatulence and colic, dystroys and brings away worms from the large bowels and prevents the paroxysmal attack of epilepsy. In neuralgic headache etc., it may be used as a *snuff*. It relieves haemoptysis and migraine. One per cent solution of it is a topical application to stop haemorrhages from wounds and a wash or a *sniff* in the cold and catarrh of the nostrils in ozoena and a *gargle* in chronic diseases of the pharynx and larynx. The sniffing of a little salt water every morning is said to improve the health of children who do not breathe well. Salt is used as an antidote in poisoning by silver nitrate or after swallowing a leech. Heated salt is largely used as dry hot *fomentation* for the relief of painful joints and swollen scrofulous glands. About a pound of powdered common salt enclosed in a loose linen bag heated over a fire and applied for 20 to 30 minutes at a time relieves gastralgia or dyspeptic colic. Salt water (1 in 30) or *sea-bathing* is recommended for the cure of various skin affections, rheumatic and muscular pains and sprains etc. The following is recommended as a bath to soothe tired nerves:—"Dissolve four ounces of sea-salt in a quart of hot water and let stand until cool; pour 2 ounces each of spirits of ammonia and of spirits of camphor into 8 ounces of alcohol; add this to the sea-salted water and shake well. Wet the body all over with a sponge dipped-

in this mixture and rub vigorously till the flesh glows. The relief is almost magical. The worn feeling vanishes, a sleepy sensation creeps over the tired nerves and one sinks away into slumber sweetly."—(Practical Medicine, April 1926.) "Salt water is the best thing for the daily cleansing of the teeth"—(Sir Harry Baldwin, Surgeon-Dentist to the King). When used as a preservative of animal substances such as meat etc., salt modifies the nutritive properties rendering it (meat etc.) less fit to nourish and sustain; hence fresh meat is better than the meat preserved by salting.

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49. STANNUM.

Sans.—Vanga; Ranga; Trapu. *Eng.*—Tin; Pewter-calx. *Arab.*—Rasas; Abruz. *Pers.*—Urziz. *Hind.*—Kathal; Rang. *Ben.*—Banga. *Guz.*—Kalai. *Mah.*—Kaloi. *Duk.*—Kathil. *Tam.*—Tagaram. *Tel.*—Vendi; Sisam. *Mal.*—Kalang; Timah. *Can.* & *Kon.*—Tavare. *Cing.*—Sudu-iyam. *Burm.*—Khai-maphyn.

Source.—Rarely met with in a free state; found as oxide in native plates or tin stone or in combination with sulphur as sulphide. It is abundant in Burma, Tennaserim and Malacca. In ancient times there must have been a trade between India and these places, says Dr. Royle, as it has been known in India from a very ancient period and is mentioned in Susruta.

Characters.—As met with in the bazaar tin is a bluish-white metal, silverlike, softer than gold, harder than lead, bending with a cracking sound, malleable but sparingly ductile with little elasticity. It is obtained by heating tin-stone with charcoal. In Ayurvedic works

two varieties of tin have been described.—(1) Impure tin (*Misraka* meaning mixed), dirty white in appearance. Arsenic and Sulphur are the chief impurities in tin ore. (2) Pure tin (*Kshuraka*), white, soft, readily fusible and bright and does not clink when struck—(Rasaratnasamuchhaya). Only pure tin should be used in the preparation of medicines.

Purification.—Tin is purified by melting it over fire and pouring the melted fluid into the milky juice of Calotropis gigentia. Another process is to drop the molten tin into the juice of Vitex negundo mixed with turmuric: the process being repeated three times the metal undergoes *shuddhi*—(Rasaratna-samuchhaya). For medicinal use it is prepared by melting purified tin in an iron cup adding to it one-fourth part of its weight of *Yavakshara* and powdered tamarind shells, agitating with an iron rod till the mass is reduced to a fine powder. It is then washed in cold water and dried over a gentle fire. Other methods consist in:—(1) melting corrected tin in an earthen pot and adding to the molten metal an equal weight of powdered turmuric and *ajowan* and cumin seeds and afterwards the powdered bark of Tamarindus indicus and Ficus religiosa and continuing stirring over fire till the tin is reduced to powder, which is then washed to rid it of vegetable-ashes—(Rasendrasara-sangraha); or (2) smearing tin-foil with a paste of orpiment and the milky juice of Calotropis gigentia and then covering it with the ashes of the bark of Ficus religiosa and Tamarindus indicus and roasting till reduced to ashes—(Rasaratna-samuchhaya.) In this process orpiment plays an important part in the reduction.

The best method of reducing tin is said to be this:—Tin is melted over fire in an iron vessel. Powdered Achyranthus aspera plant is then added to the molten tin in the iron vessel and stirred continually with iron rod when it is reduced to fine powder, wash and put it in a covered crucible and burn repeatedly by the *putapaka* process in mild heat—(Kaviraj A. C. Bisharad & Dr. S. K. Mukerji M. B.). The resulting product is a greyish white powder consisting chemically of oxide of tin (*Vanga bhasma*) with some impurities.

Uses.—It is chiefly used in diseases of the genito-urinary organs, blood and lungs. Dose of the powder is 3 to 5 grains twice daily with honey or butter. In the West oxide of tin has recently been advocated as a therapeutic agent in Staphylococcal infection in the treatment of boils etc; but has not yet been included in the Pharmacopoeia. In India it has been in use from a very ancient period in several diseases in a variety of forms. In urinary diseases tin-oxide is recommended; it is usually combined with the juice of Ocimum sanctum leaves or with juice of betel leaves in cases of difficult micturition. In painful micturition a preparation called *Trinetra Rasa* is given with a decoction in milk made of the juice of Cynodon dactylon, liquorice root, gum of Bombax malabaricum, and Tribulus terrestris. It is prepared thus:—Take of prepared tin, mercury and sulphur equal parts, rub them together in an iron mortar and soak seven times respectively in the juice of Cynodon dactylon and the decoctions of liquorice root, gum of Bombax malabaricum and Tribulus terrestriss. Then roast in a covered crucible, again soak in the above

mentioned fluid medicines and make into four-grain pills. In gonorrhoea, Zad Garib prescribes a compound powder made of tin oxide, Bamboo manna, cubebs coriander and cardamoms in equal parts. Dose is to begin with 1 *masha* (11 or 12 grains) gradually increased up to 3 *mashas*. In diabetes *Vangeshwara Rasa* which consists of *Rasasindura* (red sulphide of mercury) and *Vanga bhasma* in equal parts is recommended. Dose is 4 grains taken once a day with honey. Well-known preparations of Tin, such as *Somanath Rasa*, *Basantakumara Rasa*, *Tarakeshvar Rasa*, *Gaganadi Lauha* etc., are recommended for diabetes. *Vanga bhasma* with honey, turmeric and juice of the root of Bombax malabarica is generally used. Another compound preparation recommended in Bhaisajyaratnavali for diabetes is *Vrihat Vangesvara Rasa*. It is given with the juice of the ripe fruit of Ficus glomerata. It is said to act as an alterative tonic and said to cure all sorts of urinary diseases. It contains prepared tin, mercury, silver and talc, sulphur and camphor each 2 tolas, prepared gold and pearls, each half a tola, mixed together and soaked in the juice of Eclipta prostrata and made into 4-grain pills. In spermatorrhoea tin oxide is given with nutmeg powder and ghee. In phthisis it is given with turmeric juice for haemoptysis. In asthma it is used with copper. In paralysis it is used with garlic juice. In general weakness Sharangadhara recommends it as a tonic and alterative. It "improves health, strengthens the organs and nourishes the whole body". In weakened vitality, sexual debility and impotence it is used with the leaf-juice of Achyranthus aspera. As an

aphrodisiac it is best used combined with musk. For putrid smell in the mouth it is given with camphor. In dyspepsia it is given with either powdered long pepper or with juice of betel leaves. In constipation it is prescribed with betel leaf-juice. In jaundice it is used with clarified butter. In skin disease it is given with catechu dissolved in water. In leprosy also it is recommended and is prescribed with leaves of Vitex trifolia. Recently oxide of tin has been used and given excellent results in acne vulgaris, anthrax and styes. It "is now used either as tablets for oral administration or as solution in lipoid medium for injection"—(Jour. Ayur., Sept., 1924).

50. Svernavanga (*Eng.*—Mosaic gold) is a powder and a golden preparation of tin having a beautiful golden lustre and flaky texture. It is prepared thus:—Take equal parts of mercury, sulphur and tin-foils and rub them together; then take Sal ammoniac in quantity equal to all the above ingredients and rub these together in a mortar. Put the mixture in a glass bottle and heat in a sand bath. The resulting powder is the bisulphuret of tin. It is "used in complaints of generative organs, both in male female. It is specially effective in gleet. It is indicated as a rejuvenator and tonic of high potency which induces health-vigour, improves the appetite, increases memory, generates semen of high quality, cures gonorrhoea, spermatorrhoea, leucorrhoea and allied troubles of the generative organs". Dose is 2 to 4 grains mixed with honey before use—(Kaviraj Bisharad & Dr. S. K. Mukherji—Jour. Ayur., Sept., 1924). In impotency it is given as a rejuvenator with 4 grains of the powdered roots of Mimosa pudica. As an appetiser it is given with

the water obtained by soaking 1 tola powder of Emblic myrobalans in 4 ounces of water soaked overnight and strained through a linen in the morning. For memory it is given with the fresh expressed leaf juice of Indian penny wort. In gonorrhoea it is given with the juice of the raw turmeric or leaf-juice of glomerus fig tree or leaf-juice of *Himsagar (Pashanbhedi*, Irrissp). In spermatorrhoea it is given with cubeb powder 12 grains. In leucorrhoea it is given in the decoction of red sandal wood (1 tola of powder in 8 ounces of water boiled down to 2 ounces). For thinness of semen, it is given as for impotency, or in the leaf-juice of *Aswagandha* or with powdered roots of Mimosa pudica—12 grains per dose or with decoction of the root bark.

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51. SULPHUR.

Sans.—Gandhaka. *Eng.*—Brimstone. *Arab.*—Kibrika. *Pers.*—Gowgird. *Hind.*—Gandak. *Ben.*—Gandrak. *Duk, Cash. Punj. Guz. Mah. Kon. Can.* & *Cing.*—Gandhak. *Tel. Tam.* & *Mal.*—Gendagum. *Burm.*—Kau. *Malay.*—Balirang.

Source.—A non-metallic element found free in beds of gypsum and in a state of sublimation in regions of extinct volcanoes; also in combination with several ores called pyrites, as sulphates and sulphides of iron, copper, lead, zinc, mercury etc. In India it occurs naturally in some parts, in Nepal, Cashmere and Afghanistan and in Burma. It is a constituent of various vegetable and animal substances such as albumen etc. It is obtained by roasting, fusion or by sublimation.

Characters.—As met in the bazaar, it is of four kinds:—(1) Yellow variety or vitreous or precipitated sulphur or *Amlasar gandhaka*, occurs in semi-transparent crystals resembling the translucent ripe fruits of the *Amalaki*. This is employed for internal use in combination with mercury. (2) The white variety known as roll sulphur is found in sticks about two inches in width and 3 to 5 inches long; the taste is bitter and astringent and the smell is nauseous. It is very brittle; it is somewhat sticky to touch. It being inferior to the yellow variety is preferred for external application. (3) The red variety is called *Rati Hirakasi* or *Lal gandhak*; it occurs in small, flat or irregular crystalline pieces of a shining, orange-red, purple or brick dust colour. The taste is acrid and bitter. It burns with a faint blue flame and emits the smell of sulphur. (4) Sublimed sulphur (*Gandhak-na-phul*) is a purified form of sulphur and is prepared by washing *Gandhaka* in milk. It is first dissolved in an iron ladle smeared with butter and then gradually poured into a basin of milk. When cool and solidified it is fit for use. It is a light yellow powder of a bitter astringent taste and of a peculiar smell. Dose is 12 to 24 grains with milk or other vehicle.

Action.—Sulphur is described as of bitter, astringent taste with a peculiar strong smell. It increases bile, acts as a laxative and alterative and its preparations act as an alterative, laxative, diuretic and insecticide. Sulphur, when taken internally and in small doses, becomes absorbed and may be detected in the sweat, milk and urine. It is a stimulant to the secreting organs such as the skin and the bronchial mucous membranes. It has a

specific action on the rectum and increases the haemorrhoidal secretions. The sulphurous and mineral waters as they contain earthy and alkaline sulphates act as laxative and diuretic, while the sulphurous acid disengaged from them acts as a diaphoretic. In large doses it acts as a purgative.

Uses —In combination with mercury it is used in almost all diseases. It readily combines with and fixes metallic mercury and is therefore extensively used in combination with that metal. In combination with jaggery or cream of milk, sulphur is given in diseases like haemorrhoids, prolapsus and stricture, also in chronic skin diseases; in skin diseases sulphur is used both internally and externally. Internally it is given with milk or in the shape of a sulphurated butter, which is prepared from milk boiled with the addition of sulphur, then cooled and converted into curd which is after frequent churning converted into whey and butter; butter is next boiled when it becomes converted into oil; or it may be prepared by triturating sulphur in the juice of lemons and adding to it milk and boiling the whole and then allowing it to cool; an oily liquid will separate. This is called *Gandha taila* and is taken internally in doses of 1 to 2 minims and applied externally in skin diseases—(Sandeha Bhanjani). Sulphur and *Yavakshara* mixed with mustard oil is applied in pityriasis, psoriasis etc. In chronic skin diseases a confection of sulphur called *Gandhaka Rasayana* is used as an alterative. Dose is 1 to 2 drachms. It is made thus :—Take of sulphur 2 parts and mercury 1 part; to this add the juice of aloe leaves and triturate the whole to form a

paste. Then heat it and when cool add honey and ghee each 2 parts. Sulphur enters into the composition of a large number of applications for skin diseases as, for example :—*Adityapaka taila* which is recommended by Chakra in eczema, scabies etc. It is prepared by taking madder, the three myrobalans, lac, turmeric, orpiment, realgar and sulphur in equal parts, in all one seer, mixing them with four seers of sesamum oil and exposing the whole to the sun. Sulphur is useful in cough asthma, consumption and general debility; also in enlargement of the liver and spleen, chronic fevers etc. In chronic rheumatism, lameness, cough, asthma and skin diseases, a confection known as *Sinhanada guggula* is recommended by Chakra. It is prepared by taking sulphur and bdellium each 8 tolas, decoction of the three myrobalans 72 tolas, and castor oil 32 tolas and mixing and boiling them together in an iron vessel till reduced to the consistence of a confection. Dose is one drachm twice daily. In constipation a thin paste called *Gandhaka kalka* is recommended; it is made of sulphur and chebulic myrobalans and butter each 1 part and juice of Eclipta prostrata 3 parts well mixed together and made into a paste. For habitual constipation, in the presence of haemorrhoids, equal parts of sublimed sulphur and cream of tartar with a little honey or milk in doses of 1 drachm is taken before each meal. Dose is half to one teaspoonful once or twice daily. This also acts beneficially in cases of piles and chronic dysentery. There are certain Ayurvedic preparations containing sulphur, which are useful in asthma and other forms of "*Swasa*"; and the chief of

these are :—*Swasa-kuthar Rasa* (see "Arsenic" & "Mercury"), *Swasa-Chintamani* and *Brihatswasa Chintamani*, *Swasa kasa Chudamani*, *Maha Laksmibilas* (see "Silver"), *Mrityunjaya Rasa* (see "Mercury") *Suryavartha Rasa* (see "Copper") *Maharaj Vati* & *Vijaya Vati*. In fevers also preparations like *Mrityunjaya Rasa* are used, especially in the *Vayu* type of remittent fever and that of typhoid. In worms and several blood parasites with constipation or with fever, cough and indigestion, vermifuge combinations such as *Kitamarda rasa* and *Krimimudgar rasa* containing *ajowan* and *vidanga*, besides sulphur etc. are recommended. For *external* application in skin diseases sulphur *ointment* made up of powdered or sublimed sulphur 1 part and Kokum butter or any bland oil 6 parts, or better still so called "*balsam of sulphur*" which is simply a solution of sulphur in warm olive or sesamum oil is useful. A *sulphur bath* is generally efficacious for skin diseases, as itch, acne, rosacea, sycosis and chloasma and internally sulphur powder or mineral sulphurated waters are given with benefit. The sulphur bath is commonly made by adding the sublimed sulphur or "*milk of sulphur*" to boiling water and using it when sufficiently cool. "Sulphur baths of Vajrabai near Kalyan in the Bombay Presidency are highly useful in the treatment of chronic muscular rheumatism, gout and cutaneous affections"—(Khory). For ringworm Aksir-ul-Imraj recommends the use of a *paste* made of sulphur, sulphate of iron, borax, pitch-resin and lead carbonate in equal parts, for local application; and for scabies Ilaj-ul-Gurba recommends an ointment made of sulphur 4 *mashas*, seeds of Cassia tora

1 *seer*, cow's milk 1 *seer* and ghee 4 *chattaks*. In cases of chronic rheumatism a *liniment* composed of two ounces of powdered or sublimed sulphur and a pint of neem oil well rubbed in twice daily is very beneficial. For rheumatic, scrofulous and other painful joints a plaster called *Gandhaka Lepa* made of sulphur triturated in the leaf-juice of Cassia fistula is useful. In cases of rheumatic joints, relief is obtained from dusting the affected part with flour of sulphur at bed time, enveloping it in flannel and covering the whole with plaintain leaf to prevent the escape of the fumes. Antiparasitic and vermifuge pills such as *Krimighatini Gutika* are also useful. In worms and blood parasites with chronic fever and other troubles of gastro-intestinal tract, haematinic vermifuge such as *Vidanga Lauha* (see page 987) is recommended. A preparation called *Chaturmukha Rasa* (described under "mercury") is said to be useful in phthisis, asthma, epilepsy and other nervous diseases. Dose is 1 to 4 pills of 1 grain each taken twice a day after food. "This was administered to a case of chronic bronchitis" which was "cured"—(Ind. Drugs Report, Madras). For phthisis and chronic bronchitis with fever, *Rajmriganka Rasa* (described under "Plumbum") is also useful. For acidity and dyspepsia *Agnikumara Rasa* (see "Mica)" is useful. In cholera a *paste* made of sulphur (precipitated) 5 parts, onion juice 3 parts, garlic juice 2 parts, mustard and Bishop's weed (*Ajwan-ka-phul*) each 4 parts, is given internally. For tympanitis, colic, ascites etc., a drastic purgative named *Mahanaracha Rasa* made of sulphur, mercury and black pepper 2 parts each, ginger 3 parts and purified croton seeds 8 parts, rubbed together

for 12 hours and made into 2 grain pills, are given with cold water. After the operation of this medicine rice should be given with curdled milk and sugar. For dysentery *Vajrakapata Rasa* and *Gandhar Rasa* (described under "Mercury") and for chronic fevers with enlarged spleen *Jvarasani Rasa* (see "Mica") are recommended. For rheumatism and gout, *Sarveshvar Rasa* containing sulphur, mercury, copper, iron cinnabar etc., is used as an alterative. Dose is 2 to 4 grains. In meningitis and fevers complicated with cerebral symptoms, *Panchavaktra Rasa* containing purified mercury, aconite, sulphur, black pepper, borax and *dhatura* juice in equal parts, is administered. Dose is 4 grains. Along with these pills a decoction of the root of Calotropis gigentia with the addition of long pepper black pepper and ginger is recommended to be taken. Sulphur is often an excellent intercurrent remedy in involuntary and too quick discharge of semen, in impotency, in weakness of back and threatening paralysis.

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52. ZINCUM.

Sans.—Yashada; Tuttinaga. *Eng.*—Spelter; zinc-ore. *Hind.*—Jasta. *Ben.*—Dasta. *Guz.*—Jasad. *Duk.*—Jas. *Tam.*—Tutanagam. *Tel.*—Tuttunagam. *Can.*—Sattu. *Mal.*—Nagam; Tambaga-putch. *Kon.*—Tambaku.

Source.—Never occurs free in Nature, but exists variously combined with elements to form salts. It exists combined with oxygen as red oxide, with carbon as an impure carbonate, with sulphur as sulphide or sulphuret (Blende) or with Silica as silicate. It is obtained by subliming carbonate or oxide of zinc with charcoal.

Characters.—It is a bluish white metal of a granulated crystalline structure with considerable lustre soluble in the weakest acids. It is ductile, malleable and can be drawn into wires or rolled into sheets. Melted zinc on cooling becomes brittle and may then be reduced to powder. The fused mass if dropped into water, forms granular zinc. Pure zinc becomes tarnished by exposure to air. When melted with copper it forms an alloy known as Brass.

Purification.—It is purified and reduced to powder in the same way as tin.

Action & Uses.—These are similar to those of *Vanga bhasma* or Tin powder. Zinc *bhasma* is said to be useful in eye diseases, various forms of debility, urinary disorders, anaemia and asthma.

53. **Zinci Carbonas** (*Sans.*—Kharpara. *Eng.*—Calamine; Carbonate of zinc; *Hind.*—Kala khaparo. *Guz.*—Khapario. *Bom.*—Sang-i-basari) is prepared by calcining native Calamine (zinc sulphate and carbonate) and reducing it to powder. It is an impalpable powder; found in the bazaar as a fine, greyish-black and porous earthy mass, composed of agglutinated granules, very brittle, odorless, tasteless, insoluble in water, soluble in dilute sulphuric acid with effervescence. In shape it resembles pieces of broken white clay-pipes. Chemically it was found to consist of carbonate and silicate of zinc with traces of other metals as iron, baryta etc. It is used as a dusting powder. *Kharpara bhasma* is prepared by taking equal parts of Calamine, lac, turmeric, *haradan*, *ral* and borax, finely powdering them and then heating the mass over a fire till reduced to ashes. Dose is ½ to 2 grains. A compound *kharpara* powder or *Jvara-*

rasa or *bang-i-rasa* is prepared by taking Calamine, prepared mercury, orpiment, copper sulphate, borax and sulphur equal parts and reducing them to powder. Dose is ¼ to 1 grain. *Karpara Anjana* is prepared by adding calamine to decoction of *triphala* and stirring and then adding sulphate of copper, rock salt and borax, mixing well, drying over a sand bath, and adding when dry, one-tenth part of powdered camphor and mixing intimately. It is used as a collyrium in eye diseases. Vaidyans use calamine as a nervine tonic and alterative like oxide or carbonate of zinc. The compound powder is used in syphilis, scrofula etc. Calamine is one of the chief ingredients in the preparation known as *Suvarna Vasanta Malti* (see under "Aurum") which is used with honey and long pepper, in chronic fever, gonorrhoea, leucorrhoea etc. As an *ointment* or as a *dusting powder* it is soothing, protective and astringent, used as an application to abrasions and to inflamed skin; it is used as a lotion with mercuric bichloride (one-sixth grain to each ounce of lotion) for eczema and acne.

54. **Zinci Oxidum** (*Eng.*—White zinc; flowers of zinc. *Pers.*—Tutia; Jist. *Hind.*—Putty. *Guz.*—Jasata bhasma; Jasata-na-phula) is a soft, white, tasteless and inodorous powder, changing to pale yellow by heat. It is prepared by oxidising and roasting carbonate of zinc. It is insoluble in water, soluble without effervescence in dilute acids and in ammonia water. In action it is externally mild, soothing, astringent and dessicant. It is *dusted* over as powder in eczema, impetigo, excoriations, bed-sores and cracked nipples, or applied as *ointment* to wounds, burns, vesicular eczema, chronic skin diseases etc.,

Internally it acts as a nervine tonic, sedative, antispasmodic and astringent. it has a specific control over epilepsy, cholera and other spasmodic diseases as whooping cough, asthma, hysteria, dipsomania etc. It is a good remedy to check profuse sweating. For its astringent property it is given in bronchorrhoea, and in colliquative sweats of phthisis. Dose is 2 to 6 grains. A preparation called *Tutanag pashan* is given in gonorrhoea, leucorrhoea and spermatorrhoea with benefit. With *Jatamansi* it is given in epilepsy with good results.

THE

INDIAN MATERIA MEDICA

PART III

(ANIMAL KINGDOM.)

1. ACIPENSER HUSO or A. STELLATUS.

(Class—Pisces:—Fishes).

Eng.—Sturgeon's air bag or Swimming bladder ; Isinglass or Ichthyocolla prepared from it, *Bom.*—Aisinglasa. *Arab.*—Gerius Samak, *Hind.* & *Duk.*—Machhika-Siras. *Pers.*—Serasham-e-Mahi. *Tam.*—Minvajaram. *Tel.*—Cheppu vajaram. *Malay.*—Palog-pongikan ; Ari-ikan.

Japanese or Chinese isinglass is known as **Agar Agar**.

Aci—swift, Pinna—wing or fin. Huso—A bladder from Huyzen blas ; Ichthyocolla. The swimming bladder is so called as by its expansion and contraction these fishes swim. It contains oxygen and nitrogen.

Parts used.—The swimming bladder or sound found in front of the abdomen of several species of Sturgeons prepared and cut into fine shreds called Isinglass. American isinglass obtained from Gadus Marluccius (Hakefish) and from Otolithus regalis (weak-fish) occurs in thin sheets or ribbons.

Characters.—It is white, inodorous and very light. It is a kind of gelatin, but it is insoluble in cold water. An aqueous solution of 1 in 32 of boiling water forms on cooling a good, transparent, hard jelly.

Constituents.—In composition it is similar to albumen ; it contains pure gelatin, an insoluble membrane 5 to 30 per cent and ash 0·5 per cent. It is a constituent of animal tissue, chiefly of bones.

Action & Uses.—It is highly nutritious, demulcent and emollient. Mixed with starchy food and with soups it is given in chronic diarrhoea in children and for invalids. As an emollient a *plaster* of isinglass, made of isinglass 10, alcohol 40, glycerin 1 part and hot water, is applied on one side of the cloth for cuts and abrasions.

Animal gelatin is obtained from gelatinous tissues such as skin, tendons, ligaments, cartilages of bones etc. It is prepared by boiling these tissues in water and drying the resulting jelly in the air ; it forms translucent sheets, layers or shreds. It dissolves in hot water and solidifies into a jelly on cooling ; it is insoluble in alcohol or ether. It contains carbon 50 p. c., nitrogen 18, hydrogen 7, oxygen 24 and sulphur 0·5 p. c. It is used as Calf's feet jelly ; it is a basis for suppositories, pessaries, pills, lozenges etc,

Chondrin is obtained from the cartilages of the ribs and other non-ossifying cartilages and is analogous to gelatin. It is used as emollient, nutritive and protective. The watery solution of its jelly is precipitated by alum, acetate of lead, ferric salts, acetic and mineral acids but not by tannin and mercuric chloride.

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2. ADEPS.

Eng.—Lard ; purified fat of the hog. *Vern.*—Charbee.

Source.—Fresh fat of the abdomen of the pig, especially the fat over the mesentery, omentum and kidneys of blood and its external membranes.

Preparation & Purification.—It is first exposed to the air, then cut into thin slices, beaten in a mortar and reduced to a uniform mass. It is then put into a vessel surrounded by water and heated till the fat melts and separates from the membranous matter; it is then strained. To remove the nauseous odour, alum 15 grains and common salt 30 grains is added to every pound of the lard.

Characters.—It is a soft white unctuous mass of a faint odour, bland taste and neutral reaction. It dissolves entirely in ether, benzin and bisulphide of carbon.

Constituents.—Olein 62 per cent., and palmitin, margrain and stearin 38 p.c.

Uses.—It is used for preparing benzoated lard which contains lard incorporated in benzin powder 3 p. c., and which is employed for preparing ointments. Lard oil (*Oleum Adepis*) is obtained by expressing the fixed oil from lard at a low temperature when the stearin becomes separated from the olein; it is often adulterated with cotton oil and paraffin oil. Sometimes it is used in the preparation of nitrate of mercury ointment.

3. **Adeps Lanae Anhydrosus** (*Eng.*—Anhydrous wool fat) is a purified cholesterin—fat of sheep's wool; also found in human skin hair, feathers of fowls and various parts of other animals. For further particulars see B. P.

4. **Adeps Lanae Hydrosus** (*Eng.*—Hydrous wool fat; lanolin; agnin) is a yellowish white unctuous mass. It is not miscible with glycerine, but miscible with water. It contains cholesterin, palmitic, stearic, oleic, and

valerianic acids and ash. It is emollient; has a great affinity for the skin. It is better for ointments if mixed with an equal part of soft paraffin. It is a good application for excoriation of the mouth, nose, anus etc., also for burns and scalds. For further uses etc., see B. P.

5. Ambra Grsea (*Sans.*—Amber-Sugandah. *Eng.*—Amergris. *Arab. Hind. Ben. Mah. & Kon.*—Amber, *Pers.*—Mushk-amper; Shahabula. *Guz.*—Ambara. *Tam.*—Minumber. *Cing.*—Mus Sumbra. *Burm.*—Payen-anbhat) is a morbid excretion contained in the intestines or cæcum of the sperm whale. It is in the form of a concrete mass found floating on the Red Sea or cast on the shores of Africa. A single whale's excretion has been found to weigh 750 lbs. It is opaque, seldom white, often darkish brown, grey or of a pink colour. The odour is peculiarly fragrant, resembling that of musk; it is nearly tasteless. It melts in hot water, but not in cold; soluble in ether, fats, volatile oils and hot alcohol. It contains ambrein 85 per cent, a little of balsamic extractive and ash. It is stimulant and antispasmodic; used in general weakness, epilepsy, spasms and nervous debility; also given in high fevers with insensibility or delirium and in the collapse stage of cholera, plague and other infectious diseases. Dose is 5 to 15 grains; used as a confection.

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6. ANIMAL FLESH.

Sanskrit writers divide flesh into two classes, namely *Jangala* or land, and *Anupa* or water animals:—*Anupa mansa* (flesh of *Anupa* animals) is said to be "sweet,

soothing, heavy of digestion, demulcent, fattening, checking appetite, phlegmatic, excitive of wind (*vata*) and generative of flesh"—(N. N. Sen Gupta). Animals living on land are sub-divided into eight orders as follows:— *Jangala* or animals living in the wilderness as deers, antelopes etc. The meat of *Jangala* animals is broadly speaking sweet and astringent causing slight constipation. It is light, easy of digestion, strengthening and appetizing, checking *tridosha* and increasing vitality.

Vilastha, or animals living in holes under ground as serpents, lizards, porcupines etc.—Meat of such animals checks *Vayu*, is sweet to taste, heaty, increases *pitta*, is strengthening, lessens excretion of urine and fæces. *Guhasaya* or animals living in caverns, as tigers, lions, bears, etc.—Meat of such animals checks *Vayu*, is difficult of digestion, strengthening, somewhat good for those suffering from eye and rectal diseases. *Parnamriga* or animals living on trees, as monkeys, squirrels, etc.—Meat of such animals stimulates vitality, is good for eyes, promotes flow of urine aud fæces and is good in certain respiratory diseases and piles. *Vishkira* or birds which take their food after tearing or scattering it, as fowls, peacocks, quails, partridges, etc.—Meat of such birds is sweet and astringent, cooling, easy of digestion, strengthening, checks *tridoshas* and very good. *Pratuda* or birds which strike with their beaks, as pigeons, wag-tails, cuckoos, etc.—Meat of such birds is similar to those of *Vishkira*, except that it increases *Vayu*, but checks *Kapha* and *Pitta*. *Prasaha* or birds of prey, as the hawk, falcon etc.—The meat of such birds is very heaty, deranges *pitta*, induces acidity and diseases like ulcers and sinuses, general weakness and

even insanity. *Gramya* or domestic animals, as ox, goat, horse, sheep, etc.—The meat of such animals relieves flatulence, produces *kapha* and *pitta*, nourishes, is sweet in taste, non-acidifying in reaction, stimulating and enhancing metabolism—(Susruta).

Animals living in water or marshy lands are subdivided into five classes as follows :—*Kulechara*, or animals grazing in marshes, as buffalos, yak, rhinoceras, etc.—Meat of such animals checks *vayu* and *pitta*, is strengthening, vitalising, sweet, cooling and soothing, increases *kapha* and promotes urinary secretion. *Plava*, or birds which swim in water, as geese, ducks, cranes, etc.—Meat of such birds checks *pitta*, is soothing, heavy of digestion but cooling, stimulates secretion of faeces, strengthening and vitalising, increases *Vayu* and *Kapha*. *Kosastha*, or animals enclosed in shells, as conch-shells, bivalve-shells, etc.—Meat of such animals is sweet and soothing, cooling, strengthening, vitalising, increases faecal refuse, checks *Vayu* & *Pitta*. *Padina*, or footed aquatic animals as tortoise, crocodile etc.—Meat of such animals is similar to that of *Kosastha*. *Matsya*, or fishes :—Meat of fish is soothing, but heating after digestion, increases *Kapha* and *pitta* and checks *Vayu*. It is strengthening, vitalising and palatable and is specially soothing to alcoholics, good for sensuous individuals having strong digestion.

Of these classes, *Jangala* and *Vishkira* are considered superior to the others in an alimentary point of view. The flesh of the goat, domestic fowl, peacock and partridge is said to be easily digested and suited to the sick and convalescent. Fowl flesh is further said to be cardiac and generative of semen. The flesh of the francoline, part-

ridge (*Titir*) is said to be generative of memory and alleviative of the *tridoshas* and beneficial in cough, phthisis, fever, epistaxis and hiccup.—(N. N. Sen Gupta). The flesh of peacock (*Nila-mayura*) is "excitive of wind, cardiac, tonic and generative of memory". Peacock flesh is further said to be "beneficial in the diseases of wind, ear-disease and eye-disease. The egg is sweet, cardiac and highly beneficial in loss of semen, heart-diseases and ulcers."—(N. N. Sen Gupta). The meat of the deer, sambar, hare, quail, and partridge is recommended for habitual use. Fish, beef and pork are considered hard to digest and unsuited for daily use. "Beef is very heavy and difficult of digestion, is soothing but excites *Pitta* and *Kapha*, checks *Vayu*, is strengthening, good in cough of throat, chronic wasting fevers, dyspepsia where there is a morbid craving for food, very suitable food for people of active habits and not suitable in any other season except winter" (Charaka). From the above it is evident that the ancient Hindus used to take beef when they came from Central Asia. Gradually as they reached the warmer climate of the plains they used to take it only in winter, as the meat produces too much body heat. Afterwards they found it more economical to preserve than to kill cows and bulls. They were of great use to them when they settled and became agriculturists in India. From the former they got milk, the principal food of infants and children, diseased and old individuals. To prevent the uneducated mass who could not grasp thoroughly economical questions, religious injunction was issued not only to prevent killing of cows and bulls, but to rear them carefully with kindness. Other meat was

found equally good and cow-killing was completely stopped".—(Dr. Ashutosh Roy in the "Jour. of Ayur." Feb. 1926).

The flesh of various animals is used in medicine chiefly in the form of *ghrita* or *taila paka*. The following is a list of the more important and commonly used *ghritas* and oils made with the flesh of different animals;—*Hansadi ghrita*, prepared with the flesh of geese, and used in cephalalgia and nervous diseases. *Kukkutadi ghrita*, prepared with the flesh of fowls, and used in chronic cough. *Siva ghrita* prepared with jackal's flesh and used in insanity. *Chhagaladi ghrita*, prepared with goat's meat and used in nervous diseases. *Sambukadi taila* is an oil prepared with the flesh of snails and used externally in ear diseases. *Nakuladya ghrita* is prepared with the flesh of the mongoose and used in nervous diseases.

The following are two illustrations of preparations with animal flesh *Chhagaladya ghrita*:—Take of goat's meat 6¼ *seers*, the ten drugs called *dasamula* 6¼ *seers* in all, water 64 *seers*; boil till the latter is reduced to one-fourth and strain. Take of clarified butter, milk and the juice of Asparagus racemosus 4 *seers* each; and the following substances in the form of a paste, namely, Tinospora cordifolia, bamboo manna, Withania somnifera, Hemidesmus indicus, berries called *kakoli*, bulbs called *kshirakakoli*, pulse ef Phaseolus trilobus, and of Glycine debilis, Caelogyne ovalis (*jivanti*), and liquorice root, 1 *seer* in all; boil them together and prepare a *ghrita*. This preparation is given in facial parlysis, deafness, loss of voice or indistinct speech, convulsions, hysteria, sciatica, paralysis and other diseases of

the nervous system. *Masha taila*:—Take of goat's meat 8 *seers*, water 64 *seers*; boil together till the latter is reduced to 16 *seers*. Take of the pulse of Phaseolus roxburghii, linseed, barley, root of Barleria prionites, of Solanum jacquinii, Tribulus terrestris, bark of Calosanthes indica, jatamansi root, seeds of Mucuna pruriens, each 1 seer, water 64 seers; boil down to 16 *seers*. Take of cotton seeds, seeds of Crotolaria juncea, pulse of Dolichos uniflorus, dried pulp of Ziziphus jujuba, each 2 *seers*, water 64 *seers*; boil down to 16 *seers*. Take of ginger, long pepper, dill seeds, root of Ricinus communis, of Boerhaavia diffusa, Poederia foetida, Vanda roxburghii, Sida cordifolia, Tinospora cordifolia and Picrorrhiza kurroa equal parts in all 1 seer, and reduce them to a paste. Boil the above mentioned decoctions and the paste with 4 *seers* of sesamum oil in the usual way. This oil is rubbed externally in convulsions, paralysis, wasting of limbs and other diseases of the nervous system—(Bhaishajyaratnavali.)

7. Apis Mellifica (the hive or the honey bee) belonging to Hymenoptera class, is found in most parts of the Globe. There are two medicinal products prepared by the bee. These are:—Mel—honey, a saccharine secretion deposited by the insect in the honey comb; and Cera or wax; (which see under their respective heads).

8. Bezoar (*Eng.*—Serpent stone; Gall-stone. *Pers.*—Hajaratalbaqr; Gaorohan. *Hind. Ben. Mah.* & *Guz.*—Gorochan. *Tel.*—Gorochanamu) is said to be a concretion found in the stomach and in the gall-bladder of an ox or cow and occurs as light, and yellowish or green, solid or spherical concretions. In Hindu medicine

it is highly prized and extensively used. Dose is $\frac{1}{8}$ to $\frac{1}{4}$ grain. Artificial bezoar is a substance made up of ox gall mixed with hair, wood, magnesia, phosphate of lime pipe clay etc. For further information see Fel Bovis.

9: Bivalve Shell, belonging to Mollusca class (*Sans.*—Sukali. *Eng.*—Chhip. *Guz.*—Chhipa) is a hard, transparent, brilliant substance consisting of two halves joined together, as in oyster shells, of colour varying from white, red or yellow to black. The shape is rhomboid and fan-like. Each valve has its upper surface convex and under surface concave. A preparation known as *Chhipa bhasma* (Chhip powder, purified) is prepared like *Cowri bhasma*; its action and uses are similar to those of *Cowri bhasma*. A *paste* made of *Chipa bhasma* 5, bisulphuret and trisulphuret of arsenic each 4 parts and *Sajjikhara* 6 parts, is applied as a depilatory to remove hair.

10. Bombyx Mori (*Eng.*—Silk-pod; raw silk cocoon; silk worm-moth. *Ger.*—Serikos. *Arab.*—Abreshama. *Ben.*—Pat. *Duk.*—Reshm-ki-keedi. *Guz.*—Resham-na-potan. *Mah.* & *Kon.*—Reshmi-chi-keed. *Tam.*—Putloo puchie. *Tel.*—Puttoo purughu; Narputtio. *Can.*—Reshmi-hula) are the worms which feed on the leaves of Morus (*Shetura*). Those who feed on the leaves of Rhamnus jujuba are known as Bombyx Myletta. The cocoons or oval sacs are coverings spun by a group of silk moths during their metamorphosis. Each moth is about an inch long, half inch thick. Internally the sac contains dark-brown dried remains of a caterpillar. The cocoon-ash is the preparation used in medicine. Dose is 3 to 10 grains. It is used as a styptic, tonic and as-

tringent, to check profuse menstruation, leucorrhoea and chronic diarrhoea. It is generally given in combination with other astringents. The silk-pod is regarded as an aphrodisiac, generally used in confection for eye diseases and catarrh.

11. **Bos Taurus** (*Sans.*—Gau. *Eng.*—the ox or cow. *Hind. Guz. Mah.* & *Kon.*—Bail or Gai. *Ben.*—Van; Go. *Arab.*—Bakana. *Burm.*—Pyoung. *Tam.*—Mada. *Can.*—Etthhu; Dana) is an animal found in all parts of the world. Different parts of this animal are used in medicine *viz*—Fel Bovis; Fel Bovinum Purificatum; Lactus etc., which see under their respective heads. Fresh cowdung laved on the burnt parts alleviates the pain of burns, applied to a cut or a bruise, it is said to stop the bleeding and heal the wound. In cases of pains in consequence of falls or wounds plasters made of fresh cowdung heated on fire are applied with much benefit.

12. CASTOREUM.
(*Class:*—Rodentia)

Sans.—Gendha. *Eng.*—Castor. *Arab.*—Ashbutchegan. *Pers.*—Kundbadastar. *Hind.*—Gondbadustan; Jundo. *Duk.*—Gavad. *Guz.*—Zande-bidastara. *Tam.*—Kasturi munai. *Tel.*—Zunun; Naru; Kukka bejam. *Mal.*—Alu Beeyum.

Source.—The dried preputial follicles of the Beaver.

Parts used.—The concrete secretion from the dried preputial follicles or from the two sacs situated near the anus.

Characters.—It is a resinous product; when fresh it is of flesh colour. After drying it becomes brown or black. Its odour is pungent and resembles that of cat's urine. The taste is acid and bitter.

Constituents.—A volatile oil having carbolic acid 1 to 2 per cent, acrid bitter resin 15 to 58 p. c., crystalline substances such as castorin, cholesterin and salicin.

Action & Uses.—It is a stimulant of the exhausted nervous system. As an antispasmodic it is useful in hysteria, epilepsy, asthma, muscular tremor and tympanitis. It has a specific influence over the uterus and is given in uterine colic, as an emmenagegue in amenorrhoea and dysmenorrhoea. It is weaker in action than musk, valerian, camphor, ether or ammonia. Dose is half to one drachm in powder or in pill.

Cephalopoda.—See Os Sepie.

13. **Cera** (*Sans.*—Siktha; Madhujama. *Eng.*—Wax. *Arab.*—Shama. *Pers. & Hind.*—Mom. *Guz.*—Mina. *Bom. & Mah.*—Mum; Myana. *Can. & Kon.*—Maena. *Tam. & Mal.*—Taenmazhaou; Mellugu. *Tel.*—Mynum. *Cing.*—Miettie. *Burm.*—H'pa-noung. *Malay.*-Lilin) exists in the pollen and surface of the leaves of many plants, chiefly the wax myrtle. It is extracted by the honey bee and used in the construction of the honey comb. *Cera flava* or yellow beeswax is obtained by squeezing or pressing the comb, (when the honey is extracted) and melting it in hot water and allowing to cool. It is purified by repeating this process several times and finally casting the wax into moulds. It is a yellowish solid mass (Cera Flava B. P.) harder than butter, with honey-like odour. It is insoluble in water, soluble in cold alcohol (3 p.c.) and in chloroform (25 p.c.). It contains hydrocarbons 12 to 15 per cent., cerolein, cerinor, cerotic acid which crystallizes from boiling alcohol, myricin or myricyl palmitate, ceryl alcohol etc. Myricin is a principal constituent, crystalline,

soluble in hot ether, almost insoluble in boiling alcohol. By the action of potash it is converted into palmitic acid and myricil alcohol. Wax is an emollient and demulcent, chiefly used externally in the preparation of *ointments*, *plasters* etc. Smoking opium or beeswax in a *hookah* is said to give relief in scorpion bites by counteracting the effects of poison. A *paste* made of wax, soap and root of the castor oil plant, in honey is used for application to ulcers; this is used in dysentery where ulcers are suspected to be present. An *oil* made of wax by boiling over a fire, a mixture of yellow wax, common salt and sand and filtering and cooling the filtrate is also useful as a mild protecting sheath, when applied into the rectum in dysentery where ulcers are suspected to exist. It is also applied with benefit to painful rheumatic joints. The oil occurs generally as a liquid, but sometimes as a solid mass of a brownish dark colour.

14. **Cera Alba** (White beeswax) is yellow beeswax bleached by exposure to moisture, air and light. A *paste* made of white wax 2 tolas, Lawsonia alba or senna leaves 2 *mashas* and rose water 4 tolas is recommended by Hakims, as a local application for fistula in ano.

Cerevesia Lactis—See Kumyss.

15. **Cervus Dama** (*Sans.*—Mrigasring; Haranasing' *Eng.*—Hart's horn; Deer horn) is used in medicine in the form of a powder. It is of white colour, without odour or taste and contains 57.5 p. c., of phosphate of lime. The powder is prepared by burning heart's horn in closed vessels and then reducing the ashes to a fine powder. The powder is nutritive and demulcent; it is given internally in painful affections of the joints, sciatica

and lumbago, in cardialgia, pleurodynia and other affections of the heart. Dose is 15 to 25 grains with ghee, milk or cream. Its chief use is in cough and asthma, in low fever, loss of appetite and phosphaturia especially of children.

16. Cervus Elaphus or C. Aristotelis or C. Equinus (*Sans.*—Sambarasinga. *Eng.*—Stag's horn. *Pers.*—Maral; Gookorh. *Hind.*—Barasinga. *Ben.*—Ghous or Gaoj; (female) Bhalouje. *Guz.*—Sambar singdun. *Mah.*—Meru. *Tel.*—Kannadi. *Can.*—Kadavi; Kadaba) is used in medicine in the form of powder and paste. The horn consists of three anterior antlers curved upwards, of a dark-brown or pale yellow colour, generally marked with longitudinal ridges which are irregularly tuberculated. On section the interior is porous, hard in the centre and compact at the margin. When freshly cut it smells like burnt sugar. *Sambarsinga bhasma* (ash) is prepared by burning the horn in an open fire or by soaking its pieces in the milky juice of Calotropis gigentia and then roasting. Dose is 5 to 15 grains. This consists mainly of Calcium phosphate. James' powder may be prepared by mixing the *bhasma* with sulphuret of antimony and subjecting the mixture to white heat. This will yield antimony oxide and calcium phosphate. *Sambarsing paste* is a liquid cream obtained by rubbing the staghorn on a piece of stone, pouring hot water over it, from time to time. *Sambarasinga* is locally astringent and sedative; internally a nervine and blood tonic. The *bhasma* is given internally as a restorative tonic, with honey, in diseases of the respiratory system, as cough, asthma, consumption; also weak heart, enlarged glands

and in seminal debility. It is said to be a specific remedy in doses of 4 to 8 grains for pleurisy and pneumonia with honey and essence of ginger. The *paste* is given internally in dysentery, and locally applied with stimulating ingredients like ammonia, brandy etc., to sprains, contusions, cracks and fissures and to the forehead in headache and to relieve itching in chronic skin diseases; also to orchitis and other enlarged glands. It is a useful remedy for the relief of rheumatic pains, and for pains in the ribs.

17. Cetaceum (*Eng.*—Spermaceti. B. P.) is a concrete fatty substance contained in the large cavity in front of the large Cranium (near the upper jaw) of the Sperm Whale (Physeter Macrocephalus), found in the Indian and Pacific Oceans. It is obtained mixed with sperm oil or *oleum ceti*. The semi-fluid substance is obtained from the head of the whale; it is then dried in suitable bags and afterwards submitted to strong pressure to remove the oil; the pressed cake is melted in warm water and any impurities removed; then boiled with a weak caustic soda solution and then washed with warm water; it is finally allowed to solidify and this is Spermaceti. It is a pearly-white, translucent, crystalline unctuous mass of the consistence of lard, with a mild bland taste and a faint, fatty odour; it is reducible to powder when previously moistened by alcohol; it becomes rancid by exposure to the air; it has a neutral reaction. It is insoluble in water, soluble in fixed and volatile oils, ether, chloroform and boiling rectified spirit. It contains acetylic alcohol combined with palmitic acid forming a fat cetin. It is demulcent in action and given in alvine and urinary irritations. It is also used as a base for ointments

and cerates and as an emollient dressing it is used for blistered or excoriated surfaces and ulcers.

18. **Chenolia** (*Eng.*—Turtle) is found on the sea coast of Southern India and gulf of Manar. The oil extracted from it (*Hind.*—Kachakru. *Guz.*—Kachbo. *Mal.*—Lisk; kurakura; kulitpaun) is a pale yellow liquid of a fishy odour and disagreeable taste. It is used in medicine as alterative, nutrient and demulcent; chiefly given in scrofula, rickets, anaemia and pulmonary affections. Dose is 1 to 2 drachms.

Vaccine from tortoise.—This is the latest cure recommended for consumption. The report of the Commission appointed in Germany to examine the efficacy of Dr. Friendman's vaccine for the treatment of tuberculosis says.—"The vaccine is valuable in the anti-tuberculosis struggle as having given surprising results after one or two injections. The vaccine is composed of the pure cultures of the tubercle bacillæ of the tortoise".

19. **Coccus Cacti** belonging to Insecta class and Hemiptera Order (*Eng.*—Cochineal in. *Pers.*—Danaha. *Hind.*—Beerbouhtee. *Guz.*—Kiramaja. *Tam.*—Cochinil puchi. *Tel.*—Cochinil purugu) is an insect of a scarlet colour and resembling a grain and feeding upon a prickly plant, a species of Cactus (called the Nopal plant in Mexico). The dried bodies of the fecundated female insect are used in medicine. The insects are collected from the branches of the acti, crushed and immersed in boiling water. Whe dry they can be easily reduced to powder. Do: is 1 to 10 grains. It contains carmine or carminic acid 10 per cent, wax coccerin), fatty matter consisting of myrestin, liquid fat

and fatty acids 18, moisture 6, salts and ash 3 to 5 per cent. The carmine prepared from the insect is a brilliant red powder with a faint odour and bitterish and warm taste; it tinges the saliva violet-red. It is soluble in water and alcohol, entirely soluble in ammonia water. It has acid properties and hence called carmiric acid. It is used only as a coloring agent, as an adjunct to expectorant mixtures. It is said to possess sedative and antispasmodic properties. It is useful in whooping cough, neuralgia etc. There are two sorts of Cochineal:—Silver and Black. The Silver is the most valued; it has a greyish-red colour.

20. Coccus Lacca (*Sans.*—Laksha. *Eng.*—Lac. *Hind. Mah.* & *Kon.*—Lakh. *Ben.*—Gala. *Can. Tel.* & *Mal.*—Laksha. *Guz.*—Lakha) is the name of a lac-insect. In cold weather the branches of the lac plant (*Laksha taru*) often swarm with these insects and seem covered with a red dust. The insects (female) produce small nipplelike incrustation on the twigs, their bodies being apparently glued together by a liquor which forms a cellular texture. The animal resembles a small bag. After a time the young ones escape leaving empty cells on the branches. The twigs with this radiated cellular substance constitute *stick lac*. Various forms and sizes are given to stick lac. Thus when the resinous concretion is taken off, the twigs broken, triturated and washed in water in mortar, the greater part of the colouring matter is dissolved and the remaining granular matter is known as *seed lac*. This breaks off into small particles. Grain seed-lac when melted over a fire and squeezed through a piece of calico into troughs, spreads out into thin glossy flakes known as *shell lac*. If dropped

in rounded masses it is known as *button lac;* if in larger pieces it is called *sheet lac.* Lac is a resin usually of a reddish or dark-brown colour with a disagreeable smell and easily breakable with a crackling sound. Shell lac is used in the preparation of sealing wax, varnish for carpenters and ornaments for women. Shell lac finely powdered, half a tola mixed with honey and prepared in the form of an electuary, is given in haematemesis. Lac is said to be a specific application for caries and diseased teeth. It is also used for inunction in the form of several medicinal oils as *Lakshadi taila.* It is prepared thus:—Take of shell-lac 2 seers, water 16 seers, boil till reduced to 4 seers and strain. To this decoction of shell lac, add 4 seers of prepared sesamum oil, 16 seers of whey, and 2 tolas each of the following substances, namely Withania somnifera, turmuric, *Devadaru* wood, root of Sanseviera zeylanica, Pandanus odoratissimus, Vanda Roxburghii, dill seeds and liquorice root in the form of a paste and prepare an oil in the usual way; lastly add 4 tolas of camphor. This oil is much used for inunction in chronic fever and consumption; and is applied to the chest in remittent fevers accompanied by cough and dyspnoea; also used in lumbago, myalgia, epilepsy and hysteria, as an application to the nape of the neck and spine. It is said that if this oil is applied to the body of a pregnant woman the foetus grows fatter. A decoction of shell lac is also used in the preparation of other medicinal oils such as *Chandanadi taila*, *Angarika taila* etc., prepared in a similar way with the addition of various medicinal substances in the form of paste. Locally shell-lac is used as a stimulant

application to indolent, scrofulous or scorbutic ulcers. The fluid lac dye obtained by dissolving the crushed stick-lac in water is called *Alakta*. It is used in colouring silk.

21. CORALLIUM RUBRUM.

(*Class.*—Polypi).

Sans.—Pravala; Vidruma. *Eng.*—Coral. *Ger.*—Korallian. *Ital.*—Corallo. *Fr.*—Corail: *Arab.*—Bussud. *Pers.*—Marjau. *Hind.*—Parvara ; Munga. *Duk.*—Gulli. *Mah.* & *Kon.*—Povale. *Guz.*—Parvala. *Tam.*—Pavalam. *Can.*—Havala. *Tel.*—Pagadamu. *Mal.*—Poalam. *Cing.*—Bubalo. *Burm.*—Ky-a-ve-khet.

Source.—Red sea; Persian and Arabian Gulfs, Mediterranean sea and Atlantic Ocean.

Characters.—In appearance it is like a small shrub in a pendant or reverse position. It occurs in slender cylindrical and generally branched pieces of brick-red colour. Coral is made up of numerous minute pieces; each piece is minutely and longitudinally furrowed. In smell it resembles frankincense ; it easily breaks with crackling sound. In a raw state the stems and branches are covered with a cortical substance which is the habitation of soft small polypi.

Constituents.—Animal or organic matter 8 p. c., carbonate of lime 83 p. c., magnesium carbonate 3·5 p.c., and oxide of iron 4·5 p.c. The red colour is due to its containing iron.

Parts used.—The Calcareous shell or skeleton.

Preparation.—Coral is purified by being boiled in a decoction of the three myrobalans and then prepared for medicinal use by being calcined in covered crucibles and

then reduced to powder. *Pravala Bhasma* (Coral ash) is also prepared by soaking coral for sometime in lime-juice, then putting it in fire and calcining and finally reducing it to a fine powder. Dose is 5 to 20 grains.

Action.—Antacid, astringent, nervine tonic, laxative and diuretic; also said to be "emetic, antiphlegmonous and antibilious"—(N. N. Sen Gupta).

Uses.—As a local astringent it is used in the preparation of tooth-powders. Its chief use is in cough, phthisis, asthma, low fever, urinary diseases, spermatorrhoea, gleet and gonorrhoea, carbuncle, scrofulous affections, and as a nervine tonic in headache, giddiness and vertigo. Dose is 3 to 12 grains twice a day after meals. It was administered to cases of chronic bronchitis and pulmonary tuberculosis and found useful in both classes of diseases. It is given as an antacid to check vomiting and to cure dyspepsia and bilious headache. *Vasanta Kusumakara Rasa* described in Bhaishajyaratnavali, containing coral and pearl and also prepared gold, tin, lead and iron, talc and camphor is prepared with a difficult process into a pill mass and divided into 4-grain pills. These are given with sugar, honey and ghee in urinary diseases, impotence, gleet, diabetes, consumption and general debility. It is also a valuable alterative tonic in chronic gonorrhoea and spermatorrhoea, given in combination with an extract called *Kusavaleha* which is made up of the five roots of *Ikshu, Sara, Kasa, Kusa* aad *Darba* with sugar.

22. Cypraea Moneta (*Sans.*—Varatika. *Eng.*—Porcelaneous shells; Cowry. *Arab.*—Sadaf. *Pers.*—Khar-mahra. *Hind.*—Cowrie; Sipi. *Ben.*—Beya. *Guz.*—

Codi. *Tam.* *Mah.* *Kon.* & *Can.*—Kavdi. *Tel.*—Gavalu. *Cing.*—Pingo) is the name given to small, convolute glossy shells of variegated colours, of oblong oval shape varying in size from a tamarind seed to an almond. The upper face is smooth, shining and convex. Base is compressed with a cleft in the centre which runs longitudinally. The margin of the cleft is serrated on one side and depressed on the other. Three varieties of cowries, white, red and yellow are used in medicine. The fresh shells consist of a cellular gelatinous tissue filled with calcareous matter (earthy salts). They are insoluble in water, soluble in hydrochloric acid with effervescence. They contain phosphate, fluoride and carbonate of calcium, magnesium phosphate, manganese and sodium chloride. The cowries are first purified by being soaked in lime-juice or rice *conjee* and then calcined in covered crucibles; the process is repeated 10 or 12 times. *Cowri bhasma* (shell-ash) is said to be pungently bitter, also alterative and expectorant. It is recommended in dyspepsia, jaundice, enlarged spleen and liver, asthma and cough. The ash is given internally in scalding and gonorrhoea. Dose is 5 to 10 grains. It is externally used as caustic as various forms of ointments. *Shula Gaja Kesari* is a compound pill made of purified shell, mercury, borax, rock-salt, asafoetida and carui seeds all in equal parts, mixed and reduced to a pill-mass with the aid of the juice of betel leaves. Dose is 3 to 5 grains, useful in colic and other pains in the intestines.

23. **Cyprinus Rohita** is the bile of the rohitaka fish; it is used in medicine, either singly or in combination with the bile of buffalo, wild boar, goat and peacock,

under the name of *Pancha pitta* or the five biles. Bile is laxative and is chiefly used in soaking powders intended for being made into pill masses. *Udakamanjari Rasa* described in *Rasapradipa* containing bile of *rohitaka* fish, is given with ginger juice in recent bilious remittent fever. If there is much heat of head, cold water should be applied to it.

24. **Elephas Indicas & E. Africanus** (*Sans.*—Haste. *Eng.*—Elephant. *Hind. Mah. Duk. & Guz.*—Hathhi. *Kon.*—Hasthi. *Tel. Tam. Mal. & Can.*—Aane) is a large-sized animal belonging to the class of Proboscidea; it is common in India, Burma and Africa. The teeth or tusks of this animal are the parts used in medicine. The ashes or powder of the teeth (*Eng.*—Ivory *Arab.*—Sin-ul-fel. *Sans.*—Hastidanta. *Hind.*—Hathidant. *Cing.*—Gallah. *Burm.*—Hsen. *Pers.*—Dandan-i-fel. *Mah.* & *Kon.*—Hastantra) is prepared in the same way as *Sambarsinga bhasma*. Dose is 5 to 15 grains. It is used as astringent in leucorrhœa; also given in jaundice and to remove sterility in females. A *paste* made of the nails of the elephant 2 parts, copper sulphate 1 part and saffron 3 parts, in milk is applied in conjunctivitis.

25. **Fel Bovis** (*Eng*—Fresh ox gall. *Arab.*—Safraul-bagaz. *Pers.*—Zabrahe-gaw. *Hind.*—Bail-ka-sofra. *Duk.*—Bail-ka-pit) is fresh ox-gall secreted by the liver and collected in the gallbladder; it is a dark or yellowish green viscid liquid of a peculiar unpleasant odour and bitterish taste. It is neutral or faintly alkaline in reaction, soluble in water and alcohol.

26. **Fel Bovinum Purificatum** or Fel Tauri depuratum (*San.*—Gorochanam. *Eng.*—Purified ox-gall.

Arab.—Hajr-ul-bahr. *Pers.*—Pad Zehare Havani. *Hind.*—Zehar-mohra. *Duk. Mah. Kon.* & *Can.*—Gorochana. *Guz.*—Guruchandan. *Tam.*—Gorojanai. *Tel.*—Gorojanam. *Cing*—Visagul. *Burm.*—Goyazin) is prepared by evaporating ox-gall to one-third, adding alcohol, filtering, distilling off and evaporating until it acquires, a suitable consistence for making pills. *Gorochanam* is light and can be easily broken, between the fingers. It is laxative, antispasmodic, cooling and aromatic. It is specially indicated in measles and small-pox, to reduce excessive heat in the body; also in whooping cough and watery stools and choleraic symptoms. It is used in convulsions, hysteria, spasmodic diseases, melancholia and intestinal disorders with deficient secretion of bile, in jaundice etc., and in abortion. It is given to infants for stopping green stools and (in small doses) as a laxative. The usual adult dose is from 5 to 10 grains. It enters into the composition of some medicines used for skin diseases.

27. Gallus Bankiva *Var.* Domesticus is a domestic cock and hen. The part used in medicine is the egg of it (*Sans. Hind.* & *Ben.*—Anda. *Arab*—Baiza. *Guz.*—Bedun. *Mah* & *Kon.*—Kavta. *Can* & *Tam.*—Motte. *Tel.*—Gadda). The white is the *Ovi albumen*, the liquid albumen of egg. It contains albumen 15 to 18 p.c. little mucus, fat, sugar, extractive matter, ash consisting of alkaline salts and water 82 to 85 p. c. This albumen is distinguished from albumen of the serum of blood, by being coagulated by ether. In weight it is about 5 drachms in one egg. The yolk or *Ovi Vitellus* is a dense viscid, yellow or reddish-yellow opaque alkaline liquid. It consists of water 50 p.c., vitelline 16 p.c., inorganic

salts 1.5 p.c., oil globules, fat 30 p. c., sulphur and phosphorus contained in a sac or bag. Agitated with water it forms a milky emulsion. It is coagulated by heat and by alcohol. The egg shell or *Ovi Testa* is a white hard fragile calcareous substance composed of carbonate of lime, phosphate of lime and traces of sulphur and iron, some organic matter 1 to 5 p. c. and salts as the chlorides, iodides, sulphates and phosphates of potassium, calcium and magnesium. The oil known as the *yellow oil* is prepared by boiling the egg hard, removing the yolk and acting on this by hot *Movara* spirit or brandy. The oil globules separate and dissolve in the hot spirit; this is used as an embrocation. The ashes are prepared by incinerating the shell. *Glyceritum Vitelli* or glycerine of yolk is a dietetic preparation containing the yolk of egg 45 p. c., and glycerine 55 p. c. *Mistura Spiritus Vini Gallici* is another preparation made up of yolk of 2 eggs, brandy 4 ounces, Cinnamon water 4 ounces and refined sugar 4 drachms. Dose of this mixture is 1 to 2 ounces. Egg is in action, emollient, demulcent, laxative and nutritious. *Egg wine* prepared by beating up one egg with a tablespoonful of cold water and a mixture of a glass of sherry and half a glass of water previously heated together (not boiling) poured over this and stirred all the time, then sweetened with white sugar and a little grated nutmeg to taste and taken with toast or biscuits, twice daily is more digestive and nourishing to invalids. *Egg syrup* is prepared by beating 1 lb. of eggs with 1 lb. of water and then straining it through a cloth and then beating it to a froth and then adding 1¾ lbs of powdered sugar and 20 drops of orange-blossom water. When used

it is mixed with 10 times its volume of water. Egg is a complete food ; it contains all the elements required by the blood. Eggs covered with boiling water and allowed to stand for 5 minutes are more nourishing and digestive than eggs placed in boiling water and allowed to boil furiously for 3½ minutes. Eating a hard-boiled egg when angry produces the same effect as eating a toadstool according to Dr. Hilton Ira Jones, a noted chemist and psychologist. " The poison in toadstools is a chemical substance called muscarine". Dr. Jones says:—"The greater part of an egg is composed of colin, a harmless substance. When a person is angered, the acidity of the stomach is increased, oxidising the colin. When oxidised the colin of the egg becomes muscarine, the poison in toadstools. That is why the effect is the same." One of the oddest food cures recently advanced is that of medicated eggs. Hens are fed on wheat mixed with a salt of iron. The eggs they lay three or four days later are rich in iron already digested, so that even the most delicate patient can take it. The *white of egg* is useful in cases of poisoning by corrosive sublimate, soluble salts of lead and zinc, creosote etc. In poisoning by other acrid metallic salts it acts mechanically by enveloping the poisonous particles and also coating the mucous membrances of the stomach and intestines. Mixed with hot brandy and alum its paste is used as an embrocation or *lep* (plaster) in erysipelas. The *yolk of egg* is demulcent, more nutritious than the white and in large doses, laxative The giving of egg-yolk to infants above the age of two months is a preventive against rickets. Yolk of egg is an extremely useful food for anaemic persons. *Locally*

with lime or mixed with nitrate or oxide of mercury, it is used as a *lep* and applied to plague and other buboes and to boils to promote suppuration. As a restorative, mixed with brandy it is given internally to the weak and anaemic; also to the dyspeptics. It is used for emulsifying oils, oleo-resins and resins. The ash is antacid and styptic and used as a powder in gravel and in cases of cancer.

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28. GASTEROPODA (Monovalve or Univalve shell).

(*Class:*—Mollusca.)

Sans.—Shankha. *Eng.*—Conch. *Duk.*—Sukk. *Guz. Mah. Kon.* & *Can.*—Shankha. *Tam.*—Sanka; Sangu. *Tel.*—Sehkham.

Source.—Indian Ocean coasts.

Characters.—A porcelaneous shell of an oblong or conical form. The oblong form is bulged in the middle and tapering at each end. The conical variety is peculiar. The upper portion is like corkscrew, twisted and tapering at the end. The base is broad. The interior is hollow. The surface is hard, of a dull white colour. The upper surface is highly tuberculated, the under surface shining, very brittle and translucent.

Preparations and Uses.—*Shankha bhasma* or Conch shell ash (silicate of magnesia) is prepared by soaking the shell in lime juice and calcining in covered crucibles ten to twelve times, and finally reducing it to powder (ash). It is anodyne, carminative, digestive and astringent. Dose is 2 to 6 grains; used for ear-ache, ulcers and for eye-troubles and internally for dysentery,

gonorrhoea, colic, dyspepsia and jaundice; with whey it is taken in tympanitis, flatulence, colic etc. A compound pill called *Shankhavati* contains *Shankha bhasma* 40, tamarind seed ash 20, the five salts (*pancha lavana*) 4, asafoetida, ammonium chloride, pepper, carui, caraway, ginger, longpepper each 4 parts, purified mercury and aconite each 2 parts, mixed together and the whole triturated in the juice of lemons and made into a pill-mass. Dose is 3 to 5 grains. *Shankhavati* is used in dyspepsia and acid urine as also in irritability of the intestines as in diarrhoea, chronic dysentery etc. A mixture of *Shanka bhasma* 5, aconite 2 and black pepper 9 parts made into two-grain pills is useful in loss of appetite, dyspepsia and indigestion. A compound powder made up of *Shankha bhasma* 5, bonduc seed 4, asafoetida 3, *trikatu* and rock salt each 4 parts, mixed and powdered is used in the colicy pain in the abdomen. Another compound powder containing equal parts of *Shankha bhasma*, Ficus religiosa, borax and aconite is used in catarrh, sore-throat, cough, asthma etc. Dose is two grains. *Kaphaketu Rasa* (see " Sodii Biboras ") containing conch-shell lime is also useful in these cases, and also in discharges from ears nose etc. In all sorts of *Kaphaja* type of fever it is used as an expectorant, a resolvent of the phlegm and febrifuge.

29. **Helix Aspera** (*Bom.* & *Guz.*—Nakhala) is a fresh water Mollusk. The shell is of dark-brown colour and made of numerous plates placed one upon another, just as in bivalve shells. It is hard, bony and opaque, concave on its under-surface where the mollusk resides ; the other surface is convex. On this surface the layers

are most distinctly marked. The shell is used in the form of a paste, as a perfume and in the preparation of various medicated oils. It is an ingredient of *Dhupela tela*. As a hair cosmetic it is highly recommended.

30. Hemiptera (*Pers.*—Shaker-e-tigala, *Hind.*—Shakara tagara) occurs as irregular gall-like pieces of a dirty white colour and oblong or oval or sometimes of irregular shape. It is hollow within and generally contains a dead beetle or pupa of an oval shape and black colour. It tastes like starch and after chewing it leaves an acrid sensation in the mouth. It is an antispasmodic and useful in hysteria, gout, renal diseases, dropsy, gonorrhoea and jaundice. It is generally used by Mahomedan Hakims. A compound powder consisting of it and almonds, pistachio, babul gum, bark of Mimusops elengi and dry ginger all in equal parts, powdered finely and mixed together, is used in old chronic coughs. Dose is grains 5 to 10; two or three times a day.

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31. HIRUDO MEDICINALIS.
(*Class.*—Annelida).

Sans.—Jaluka. *Eng.*—Leech. *Arab.*—Aluk. *Pers.*—Zaloka. *Hind. Ben. Duk.* & *Punj.*—Jonk. *Cash.*—Drik. *Guz.*—Jalo. *Mah.* & *Kon.*—Jalu. *Tam.*—Attei. *Tel.*—Attalu; Jelagalu. *Can.*—Jigani. *Mal.*—Attah. *Burm.*—Himyau; Meiyon. *Cing.*—Kudallu; Pudal.

Source.—Leeches are found in a clear shallow or deep pool of water containing water lilies and other aquatic sweet smelling plants. They are collected on a piece of Calico containing some red clay; when leeches are required to be preserved for some days the roots of water lilies are given them as food.

Characters.—Leeches are of both aquatic and terrestrial habits. Small and middle sized leeches are the best for medicinal use. They are black, or of an olive colour, marked with 6 longitudinal stripes. The body is elongated 2 or 3 inches long and tapering at each end. It is convex and wrinkled transversely. There are other varieties of leeches, some of which are venomous and these are found near putrid fish or animals in foul, stagnant and putrescent water. Such leeches are consequently to be avoided.

Action & Uses.—Antiphlogistic, used for the local abstraction of blood. Depletion by leeches is analogous to the abstraction of blood by venesection, by lancing or by moist cupping. The quantity of blood drawn off by each Indian leech is about a drachm to a drachm and a half. The antiphlogistic action is slow. They make a limited or gradual local impression. They are used in acute inflammation of the glands, as the mammae, parotid etc; also in incipient abscesses, boils, in bruises, sprains and blows, in inflammations of the serous membranes and in inflammation affecting the skin or bones. This is generally followed by hot fomentations to relieve the pain and the inflammation. They should never be used in affections of the scrotum or eyelids. Obstinate vomiting may occasionally be checked by a few leeches to the pit of the stomach after ordinary means have failed. In violent headache leeches are applied to the temples with benefit. In fevers with severe headache they are applied but only in the early stages of the disease; they are applied at the nape of the neck if relief is not obtained by applying to the temples. In severe pain in the chest or abdomen occurring during fevers 8 to 10 leeches applied

immediately over the seat of pain often afford manifest relief. In severe headache or fulness of head depending upon the stoppage of a discharge of blood from piles, leeches close to the anus frequently afford great relief, but care is necessary lest they creep up into the rectum. When the headache depends upon the sudden stoppage of the menstrual discharge the leeches should be applied to the inner part of the thighs. In acute dysentery a few leeches (6 to 9) to the verge of the anus are often serviceable in relieving the pain and straining at stool. The same measure is also useful in congestion of the liver, when placed over the region of the liver, and preferably at the verge of the anus. When leeches are scarce and it is intended to abstract more blood, the leeches may be punctured with a needle just near the tail, while stil sucking or when nearly gorged with blood, when the blood is drained out of their body and they begin to suck again.

To stop the bleeding continuing after the removal of the leeches, various hæmostatics are used, such as burnt cotton, desiccated alum, copper sulphate, tannin, turmeric, burnt rags, cobweb, scraped lint etc. Pressure with the finger over the bite may be useful. In obstinate cases solution of the perchloride of iron is used with benefit. Even a very fine point of caustic nitrate of silver is inserted into the wound with benefit. Touching the bite with the point of a red hot needle or applying a ligature or pressure by lint and bandage has also been tried with success.

Precautions.—To make a leech bite on a particular spot cut a small hole in a piece of paper, lay this over the

spot and apply the leech over the spot which should be previously cleansed and smeared over with cream or sugared milk or the skin scratched so that a little blood oozes out. To facilitate the action of leeches or to promote the bleeding from leech bites the affected part should be throughly washed or cleaned with hot water. In some cases poultices or fomentations should be applied to stimulate the skin. Leeches should not be applied immediately over a large prominent vein, nor to the eye lids nor to the bosom of a woman, especially during pregnancy, nor to the loose skin of the eyelids, mammæ, penis or scrotum as the bites in these situations are apt to be followed by infiltration or inflammation. Great caution is necessary in applying leeches to young children as they bleed much more freely than adults; they should, when practicable be applied where a bone is near the surface, so that in case of excessive bleeding pressure may be made against it. Generally one leech is sufficient for every two years of the patient's age up to adult life, or six is the limit for ordinary cases, even upto adolescence; for application morning is the best time. It should not be put on in the evening, lest there be serious consequences from hæmorrhage and want of proper attendance.

Applications.—If the leeches do not fix quickly apply a drop or two of milk or blood to the part. Some apply clay to the part, others prick it with a fine needle to make the skin besmeared with blood, which will induce them to fix themselves more readily. When the leeches are sucking, sprinkle a few drops of water upon their bodies. When the leeches are to be removed, sprinkle a small

quantity of salt upon their head to make them drop off. After their removal the part upon which the leeches have been is to be smeared with honey, cold water and astringent substances. If the bleeding continues the above-mentioned measures are to be adopted. If after their removal it is necessary to abstract more blood, poultices of bran or bread or varalians, of *Nirgundi* leaves or of *Neem* leaves may be applied.

Iris Nobilis—See Corallium Rubrum.

32. **Kumyss or Kumiss** is a fermented liquor obtained from cow's, mare's or camel's milk. It is prepared by adding sugar of milk to fresh milk in an open vessel and beating it till it ferments or by adding some acid to fresh milk to assist lactic acid fermentation. During fermentation caseine and butter are skimmed off and the fermented whey is collected. It contains 1 to 3 per cent of alcohol, sugar, lactic acid, salts, carbonic acid and ether. Dose is 2 to 4 ounces. Kumyss is a dietetic, nourishing and restorative agent, given in diabetes, in irritability of the stomach and in obstinate vomiting.

Lacca—See Coccus Lacca.

33. **Lacerta Agilis** belonging to Reptilia (*Eng.*—Sand Lizard. *Pers.*—Rege mahi. *Guz.*—Sarado. *Bom.*—Ghilodi) is a species of a sand fish with thorny spines. It has a head and four legs; when dry the skeletons appear more like a fish without head and legs. It is of a light brown colour, about six inches in length with darkish brown reticulations on its back. It is used in the form of ash or *bhasma* in doses of 5 to 8 grains as a nervine tonic, stimulant and aphrodisiac in general

debility and seminal weakness. It is used by Unani physicians with the yolk of eggs.

34. LACTUS.

Sans.—Dugdha; Ksheera. *Eng.*—Mil. *Arab.*—Halib. *Pers.*—Sher. *Hind. Guz. Mah.* & *Kon.*—Dudh. *Tam.* & *Tel.*—Palu. *Can.*—Halu. *Mal.*—Musu; Pala. *Cing.*—Ella errie.

Source.—Mammary glands of females, cows, she-goats, she-asses, she-camels, mares etc.

Characters.—Milk is an opaque, white, emulsive, faintly alkaline fluid; taste is sweet and bland odour faint and peculiar; kept for a long time it ferments. Specific Gravity is about 1.030. Under the microscope, numerous minute fat globules are seen floating in the liquid. When milk is allowed to stand for some hours, a scum forms on the surface in the form of cream, which when churned, separates into butter and butter-milk. Raw milk becomes spoiled after 10-12 hours after which it is indigestible and harmful and acts as poison to the system. Such milk should be avoided.

Constituents.—Milk contains all the elements necessary for the growth and nutrition of bones, nerves, muscles and other tissues. Milk contains also Vitamines which are Nature's antidotes to rickets, scurvy and other results of defective nutrition. The constituents of milk vary according to the animal and the kind of food it takes. Cow's milk contains on an average albuminoids (casein) 4, fat (butter) 4, sugar (milk-sugar) 5, various salts etc, 1, and water 86 per cent. It contains a large proportion of Calcium phosphate, an important salt required for the formation of bone and also for the

proper coagulibility of the blood. The other mineral constituents of Cow's milk are potassium and magnesium phosphates, sodium chloride and a trace of phosphate of iron. *Buffalo's Milk* is richer than the cow's milk and yields more butter. *Ass's milk* contains less of salts and fat and more of sugar. *Human milk* contains more of fat and less of salts. It contains all the necessary elements for the tender baby and nothing more or less. Not a single specimen of artificial food is a substitute for Mother's milk. The food constituents of *Goat's milk* vary only a little from that of human milk. Then comes the ass's milk; then comes the cow's milk which differs much more from human milk.

Preparations :—Cream (*Sans.*—Santanika), butter (*Navanita*), skimmed milk, butter-milk (*Takra*), Curd or curdled milk (*Dadhi*), Whey (*Mastu*), Cheese, Ghee (*Ghrita*) and Milk sugar or Saccharum lactis containing Lactose *Pasteurised milk* is absolutely safe and conserves the Vitamines which boiling destroys. *Condensed milk* is prepared by adding sugar and an alkali to fresh cow's milk and by evaporating it in a vacuum till it becomes dark and all the useless water of the milk having gone off in steam. When reduced to a fine powder it is known as desiccated milk or *Lactogen* from which all the water is drawn off. The drying is done so instantaneously and carefully that the vital properties of the milk remain absolutely intact, though the milk is left as a fine powder. *Peptonised* or *predigested milk* is prepared by heating milk with water (2 to 1) to a temperature of 140 F. and adding to it when cool peptonising powder or Sodium carbonate 10 grains and liquor pancreatis 2 drachms in one pint and

boiling the product. *Plasmon* is a pure soluble milk product prepared by separating Casein of milk and leaving the albumen unaltered. It is a colourless white powder, containing 92 per cent of proteids, odourless and tasteless, soluble in soup and milk. In water the powder swells up to a gelatinous mass which dissolves as more water is added. It contains albumen, phosphates of ammonium, sodium and potassium and a small quantity of common salt. *Cheese* is prepared by coagulating cow's milk by means of rennet or an acid or with yeast and after separation submitting it to pressure. Like albumen it is not coagulated by heat but is precipitated by acids. It contains mostly albuminoids (casein), fat, salts, other non-nitrogenous matter and water. *Eucasein* is a caseine ammonium compound. It is milk-caseine in a soluble and easily digestible form, prepared solely from the pure milk of the cow. It is a soluble powder containing about 95 per cent of pure absorbable albumen without any odour or taste. Used as food it is highly nutritive. Cheese is extremely rich in the growth of vitamines and most of the minerals in the original milk go into the cheese. *Butter* (*Hind. Guz. Pers. & Bom.*—Mackhan; Muska. *Mah. & Kon.*—Lonee. *Tam. & Tel.*—Venne. *Can.*—Benne) is a principal fatty matter of the milk. It is obtained by heating milk and allowing it to stand; butter globules rise to the surface together with some caseine and serum forming what is called cream-butter. The fat globules or butter alone is separated from casein by churning. Butter consists of olein 30 per cent, palmitin and stearin 68 per cent, glycerides of

butyric, capronic, caprylic and caprinic acids 2 per cent. Milk from which cream is separated is known as *skimmed milk*. *Butter-milk* is a residue of caseine, serum and a trace of butter left after the butter is removed by churning. *Cream* (*Pers.*—Qimaq. *Hind. Ben. Mah.* & *Guz.*—Malai) is the oily part of milk which is very nutritive and agreeable but not easily digestible. *Ghee* is clarified butter, obtained by boiling fresh butter and removing the impurities which settle down. *Curdled milk* (*Pers.*—Jugrat. *Hind. Ben. Mah. Guz.* & *Kon.*—Dahee. *Can.*—Mosru) is prepared by adding some acid, lime juice or rennet or a little curdled milk as a ferment to milk previously boiled. In the course of 12 hours the whole of the milk thus acted upon is changed into a more or less thick, acidulous, jelly-like mass. It contains a large proportion of nutritious substance. *Whey* (*Hind.* & *Bom.*—Chans) is the watery portion of milk left after the casein or curd is separated. When evaporated it yields sugar of milk, one or two nitrogenous elements, lactic acid and salts. Whey is prepared by adding two teaspoonfuls of rennet to $1\frac{1}{2}$ pints of milk heated to 104° F. carefully, but thoroughly breaking up the clot which forms and straining through muslin. *Lactose* of milk sugar is a crystallised, greyish white, odourless, faintly sweet, hard mass, gritty when chewed, obtained from the whey of milk.

Action.—Milk is generally considered cooling, nutritive, strengthening and vitalizing; also demulcent and emollient. Milk is the vital fluid food of the class of the animal of which it is the product. Cow's milk is pleasant to take, very wholesome, promotes memory, strength and longevity and increases the secretion of

semen. Its chief defect is its rather constipating effect. Boiling which kills the disease germs only seems to increase the constipating effect which can be counteracted to a certain extent by eating wholemeal bread with it. Ten ounces of such bread with a pint of skim-milk supplies a cheaper nutritious lunch and forms a third of the nutriment required for the whole day. According to Ayurveda properties of milk of Cow according to colour of skin are mentioned as follows:—(1) Milk of black cows;—very wholesome and good in "*Vayu*" disease; (2) Milk of yellow cows:—good in "*Vayu* and *Pitta*" disease; (3) Milk of white cows:—heavy of digestion and deranges "*Kapha*"; (4) Milk of red or speckled cows:—good in "*Vayu*" disease; (5) Milk of small hill cows:—more oily and heavy of digestion; (6) Milk of scanty eater cows:—heavy, increases "*Kapha*", is very good tonic; (7) Milk of cows with calves:—good; (8) Milk of cows without calves:—not good; (9) Milk of cows calved long ago:—good tonic, checks "*Tridosha*"—(Jour. Ayur., March 1926.) *Buffalo's milk* is said to be sweeter, heavier and more oily than cow's milk. When taken in large quantities it induces sleepiness, spoils appetite and brings on cold. With some persons it causes purging. Buffalo's milk contains more fat than the cow's milk and is heavier. *Goat's milk* is sweet, cooling and constipating. It is very invigorating and promotes appetite and digestion. *Ewe's milk* is saltish, heating and oily and not easily digested; it contains fat 6.18 per cent; it causes eye-trouble. It is good for growth of hair but causes respiratory trouble, ulcers on tongue, lips and gums. *Mare's milk* is saltish, acidulous, strengthening,

stimulant, demulcent and alleviative of *Kapha* and *Vata*. It is generally used by the Moguls. *Ass's milk* is saltish and easily digestible. *Camel's milk* is light, sweet, slightly saline and laxative. It is used in Asia. *Human milk* is light, astringent, refrigerant, nutritive and strengthening. *Elephant's milk* is sweetish, astringent, muscle-builder, heavy, fattening, increases vigour and strength. The milk milked in the mornings due to the cooling influence of the night and lack of exercise is heavy, constipative and refrigerant; the evening milk, as the animals are warmed by the sun, exercise etc., relieves rheumatism and fatigue and is beneficial to the eyes. *Raw milk* (except human) is heavy; *boiled milk* is lighter, but becomes soon contaminated and hence the need of care. *Butter* from cow's milk is tonic, cardiac, stimulant, invigorating, and stomachic. Butter from buffalo milk is "sweetish, astringent, refrigerant, demulcent, generative of semen, alleviative of wind and bile." Butter is a fatty food; used also as an ointment base. *Butter-milk* is astringent, light, cooling, appetising, nutritive and tonic. It is a nice beverage in a tropical country like India and is largely used by the middle and the poorer classes. *Curds* or *Curdled milk* is agreeable, digestive and cooling; it is acid and astringent, "relieves *Vayu*, produces marrow, semen, strength and blood, aggravates *pitta* and *kapha*, helps digestion, and is an appetiser;" taken to excess it causes biliousness and catarrh. It is said to be good for meat-eaters in whom proteolytic coli predominates. It aggravates amylolytic fermentation and hence Ayurvedic restriction of its free use by Vegetarians. *Ghee* is considered cooling, emollient and stomachic. It increases the fatty

tissues and mental powers, improves the voice, beauty and complexion. *Whey* is said to have properties similar to those of curdled milk ; in particular it is said to favour the circulation of the animal fluids and therefore useful in constipation. Whey from Buffalo milk is " phlegmatic and generative of oedema " ; said to be " beneficial in spleen, piles, diarrhoea and cholera." The *curd* of milk (*Kilataka*) is hard of digestion, but is nourishing, tonic, and suited to persons with strong digestive powers. *Cream* is also hard of digestion but nourishing, agreeable and demulcent. *Lactose* is nutrient ; also uterine, stimulant and tonic. It is harder, less soluble and less sweet than cane-sugar and therefore is a better excipient and diluent for powders that require trituration. Lactose is a powerful diuretic—a renal diuretic like caffeine and theobromine. Dilute acids convert it into glucose. Nitric acid converts it into oxalic and mucic acids—a differentiating point from other sugars.

Uses.—As an article of diet milk is peculiarly adapted for all—the children, the aged, wounded, emaciated, starved or those exhausted by sexual excess, for suckling women, for patients suffering from *chronic* fever, mental diseases, gastric catarrh, ulcer and cancer of the stomach, gastric disorders such as dyspepsia, intestinal disorders as diarrhoea and dysentery, albuminuria and other urinary complaints, ascites and anasarca. But in " low fever " according to Susruta "milk should not be drunk as it might even cause death." A pure milk diet to the exclusion of every article including salt and water even, is often prescribed in the later stages of anasarca, ascites and chronic bowel com-

plaints; along with this diet some medicine as *Dugdhavati*, *Survarnaparpati* or *Manamandu* is usually prescribed. Milk is useful in relieving irritation of the respiratory and digestive tracts or organs. A mixture of equal quantities of skim milk and cream is an excellent natural cure for acid stomach or heart-burn. For persons troubled with insomnia a cup of hot milk before retiring to bed is recommended. Malted milk is also good for this condition. Persons complaining of a feeling of distension after a drink of milk are recommended to add and dissolve a pinch of salt to each cup of milk to be taken. Milk is a very effective remedy in poisoning by corrosive sublimate, copper sulphate and even by corrosive acids. In enteric fevers milk is the proper diet ; it is administered freely diluted with barley water or with lime water or any other diluent. In the treatment of low-fever cases fresh milk well diluted and peptonised is useful. Milk is frequently used as a vehicle to poultices. Dr. Moravesik of Budapest states that *milk injections* are more effective in parasis than anti-syphilitic treatment—(Lancet). In *acute* iritis from whatever cause improvement after milk injections is prompt, especially the subsidence of pain "—(Practical Medicine, March 1926). In infants who are constitutionally predisposed to eczema (parental) injections of 1 to 4 cc., of milk are given. Repeat the injections every fourth day till 5 or 6 or even 10 injections are given—(Junagadh Rosullkanji Hospital Bulletin). Milk protein injections :—"Dr. Geo. Gelhorn says"—"While milk protein injections cannot be expected "to raise the dead" they do much to build up the natural

immunity to the patient in certain crises. Eye-men are using them in corneal ulcer with 100 p. c. results. Injection of milk 5 cc. the first, 8 cc. the third day and 10 cc. for following injections with an interval of one or two days between injections; this interval to be lengthened if severe reactions occur. Reactions, as a rule, occur after the first two or three injections only, and the severity of the reaction has nothing to do with the results accomplished. The course of treatment consists usually of ten injections, although remarkable results have followed three or four doses. The white cell count was distinctly raised, although quite gradually, after injections to full normal. He stated that he was using milk protein before operations"—(Clinical Medicine). As an *embrocation* to clear the skin and complexion milk is applied to the body and within half an hour the application is followed by a warm bath. *Goat's milk* is useful in phthisis, bile (*pitta*), cough, chronic diarrhoea and vomiting in children; cures dyspnoea, bronchitis and gastrorrhagia. *Ewe's milk* moderates *Kapha* and *pitta*; it is a good diet in rheumatism and hectic cough. *Sheep's milk* is "alleviative of phlegm and bile (*kapha* and *pitta*) and beneficial in obesity, flatulence and gonorrhoea". *Ass's milk* is useful in general debility, high colored and scanty urine etc. It is extensively used as a remedy against cough and liver complaints especially among children and old people and in chronic bronchitis, pertussis and consumption. *Mare's milk* is beneficial in the rheumatism of the extremities. *Camel's milk* is useful in dropsy, asthma and general scrofulous conditions; in inflammations, cancers, piles, intestinal worms, skin lesions

and poisonings. *Human milk* is recommended as a collyrium and as an application to head in eye complaints and also for irrigation of the nose as well as the eyelids. It is recommended also to grown up people suffering from chronic asthma and consumption. In China those suffering from chest diseases suck women and find relief. *Elephant's milk* is beneficial to the eyes. Its curd is beneficial in *sula* pains and in diseases resulting from vitiated *Kapha*. The butter and ghee is stomachic, antiphlegmatic, antibilious and anthelmintic. *Butter from cow's milk* is used with sugar in phthisis, piles, chronic dysentery, anorexia, facial paralysis etc. It agrees best with the old and young. It is given in irritation of the alimentary canal in albuminuria and in diabetes; it is beneficial in chronic dysentery, piles, trismus and anorexia—(Charaka). In dysentery it is used with *sang jirun*. Use of plenty of butter and other fatty foods is said to be a preventive and curative of Beri-beri. *Locally* it is smeared over the leaves of Calotropis gigentia, Argyreia speciosa etc., and used as soothing applications over the abdomen in colic. Two tolas of cow's butter washed in water one hundred times and mixed with half a tola of sandal oil is an application that cures all sorts of sores—Pandit J. L. Duveji. Plaintain leaves besmeared with butter are used as a coating over burnt or blistered surfaces. *Butter from goat's milk* is " stomachic, cardiac, alleviative of *tridoshas* and beneficial in eye-diseases; alleviative of cough, phthisis and phlegm (*kapha*). *Butter milk* is efficacious in cases of dyspepsia: It is a fine remedy for most cases of digestive disturbance, especially those

accompanied by fever. It is a sovereign beverage for those who are predisposed to attacks of appendicitis. It is found to contain Vitamin C. Butter-milk or water mixed with 6 *mashas* (70 grains) of alum powder or *Bhringraj* leaves pestled in a mortar is said to cause vomiting and thus counteract poisonous effects in cases of serpent-bites. *Whey* is highly useful in phthisis, dysentery, piles, tumours, colic catarrh, and diarrhoea; it is also recommended in strangury, in constipation, splenitis, stomatitis, adiposis, flatulence and also in jaundice where it is given with carbonates of potassium and sodium. In fevers attended with coryza and anorexia whey, mixed with *trikatu* is given with much benefit. A diet of whey, fruit and vegetables is much in vogue for those who have lived too freely. Curd is useful given in anorexia, nausea, vomiting and rheumatism. It is given with pomegranate bark or *sanga-jirun* in diarrhoea or dysentery in children. *Curdled milk* is said to be useful in jaundice and an antidote of copper. It is also useful in fever and urinary disorders. Curds mixed with black pepper administered to the person bitten by serpent is said to counteract the effects of poison—(Pundit J. L. Duveji). *Ghee* is much esteemed as an application over blistered surfaces, with either betel or plantain leaves, used in the preparation of medicated oils, and as an ointment base. It is locally annointed in irritability of the skin, used as an injection in wasting diseases. *Internally* it is given with honey, sugar and with mineral ashes (*Bhasmas*) or *Matras* in tympanitis, painful dyspepsia and retained secretions. "Ghee, sugar-candy or honey mixed is a medicine for all ordinary com-

plaints of children." "To those children who incessantly cry and do not suck mother's milk give sodium chloride mixed with ghee and sugarcandy "—(Pdt. J. L. Duveji). Ghee is dropped into the nose in coryza and applied to the face to improve complexion and impart beauty. In strong fevers the body is annointed with an emulsion of black-pepper and ghee, which is followed in about half an hour by a tepid bath, after which the patient is made to sleep on a bed covered with leaves of lotus flower. According to Darpana, an emulsion of sandalwood and of old ghee or clarified butter that has been washed a hundred times in cold water is used for applying to the body of the patient, before giving him a tepid bath; then he is made to lie on the bedding made of the leaves of Nelumbium speciosum. *Purana ghrita* or ghee more than ten years old has a strong pungent odour and reddish-brown colour. It is a very valuable external application. Ghee or clarified butter a hundred years old is sometimes available; some specimens of it are quite dry and hard and nearly inodorous. They look more like some sort of earth than an animal substance. It is first repeatedly washed with cold water and then rubbed with it till it is reduced to a soapy frothy fluid which is used as a *liniment*. It is regarded as cooling and emollient and is much used as a liniment in nervous diseases such as insanity, epilepsy, neuralgia, paralysis, cephalalgia and asthma, in rheumatic affections, stiff joints, burning of the body, hands or feet, affections of the eyes etc.—(Chakra). It has also a great reputation for reducing the temperature in fever. This is doubtless due to the free perspiration induced by the application. In pains in the breast old ghee mixed with the powder of

dry ginger proves highly beneficial. A ghee which is 111 years old is called *Mahaghrita*. It is "demulcent and alleviative of wind and phlegm." *Ghee from buffalo milk* is "flatulent, cardiac, excitive of digestive fire, and generative of the secretion of semen, and is beneficial in piles and diarrhoea." *Cream* is used as a vehicle for certain calxes administered unto a patient of pulmonary consumption, cough and asthma. *Lactose* is useful in debility, phthisis, gastric irritability, and for sweetening the food of infants. It is specially useful in the dropsy of cardiac or renal origin. As uterine stimulant it is given in protracted labour, after the os has been fully dilated.

Purity of milk is most important. Dangers of impure milk are many *e. g.*—Tuberculosis ; infantile diarrhoea owing to infection by flies or other forms of dirt or by unclean bottles and teats ; infectious diseases such as typhoid and scarlet fevers, diphtheria, cholera etc., through milk contaminated with disease germs. Milk is rendered safe from tubercle etc. by heating it over the flame of a gas-ring turned very low and slowly or over any other form of slow heat to about 170° F. and then taking it off and allowing it to stand in a cool larder or place ; skim off the cream next morning and the residual "scald" milk becomes fit for use. Hess and Matz of New York.—(J.A.M.A. May 17, 1924) say that lemon juice may be added directly to cow's milk, 21 c.c. (about 5½ drachms) to a quart of milk, without producing curdling. In this way the milk is rendered more digestible and its true acidity in the stomach is made to resemble more nearly

that of human milk. Infants thrive well on it. Lemon juice also supplies the antiscorbutic vitamine.

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35. MEL.

(*Class.*—HYMENOPTERA)

Sans.—Madhu; Makshika. *Eng.*—Honey. *Arab.*—Injubin; Asatul-nahl. *Pers.*—Shadad-Angabina. *Punj.*—Saht. *Cash.*—Mhach. *Duk.*—Shahad. *Hind. Ben.* & *Guz.*—Madha. *Mah.*—Madh. *Kon.*—Mhou. *Tam.* & *Mal.*—Taen. *Tel.*—Taenu. *Can.*—Jaentuppa. *Cing.*—Mipanny. *Burm.*—Pya-ya. *Malay.*—Ayur-mader.

Source.—Beehive or honey comb, where it is deposited by the honey-bee. It occurs in the nectaries of flowers wherefrom it is sucked by the bees and then stored up in the comb. The finest honey is the virgin honey which drains itself from the comb, and that which is freshly procured from the hive.

Characters.—It is a viscid, semi-translucent liquid of a light yellowish-brown colour, of an aromatic odour and of a sweet acrid taste. After a time it becomes opaque and crystalline.

Constituents.—Grape-sugar or dextrose which becomes crystalline, fruit-sugar or levulose which remains liquid; wax, volatile oil; proteids, mucilage, colouring matter, formic acid and ash. Some of the substances contained are pollen dust, ethereal oil, various phosphates, lime and iron. Most of the elements found in the human body are, in small proportions present in honey. The dextrose and levulose present in it are monosaccharides and are absorbed easily. As regards the Vitamin content it is stated that honey contains both the fat-soluble and water-

soluble principles. In addition it contains a diastatic ferment similar to that of saliva and having the power of converting starch into sugar.

Varieties.—Eight sorts of honey are described by Susruta:—(1) *Makshika* or the honey collected by the common bee called *madhumakshika*. (2) *Bhramara*, or the honey collected by a large black bee called *bhramara*. This is said to be beneficial in phlegm, cough, fever and epistaxis. It is used as a linctus. (3) *Kshaudra*, or honey collected by a sort of small bee of tawny colour, called *Kshudra*. This is said to be useful in eye diseases. It possesses all the properties of *Makshika madhu*. (4) *Pauttika*, or honey collected by a small black bee resembling a gnat, called *puttika*. (5) *Chhatra*, or honey formed by tawny or yellow wasps which make their hives in the shape of umbrellas. This is beneficial in haematemesis, worms, leucoderma, gonorrhoea and alleviative of giddiness, hysteria and poison. (6) *Argha* or wild honey collected by a sort of yellow bee like the *bhramara*. This is said to be beneficial in "eye diseases, piles, cholera, cough, phthisis, jaundice and ulcers". (7) *Audalaka* is a bitter and acrid substance found in the nests of white ants. (8) *Dala* or unprepared honey found on flowers. It is said to be "producive of digestive fire, generative of bile and beneficial in phlegm, gonorrhoea and vomiting". Of these varieties the first four only are described by recent writers and the first alone is used in medicine.

Action.—New honey is considered demulcent and laxative. Honey more than a year old is said to be astringent and demulcent. It is also detergent, pectoral, emollient and laxative. It also possesses nutritive

properties. The fatty acids present in honey stimulate peristalsis and digestion. Honey in moderate doses has a beneficial effect on the digestion and appetite of those with weak stomachs and loose bowels. Its value lies in providing a readily absorbable food. It is the most potent fuel to provide energy for muscle, and consequently most valuable for that all-important, most vital muscle—the heart, which knows no complete physical rest. Lime in honey is wonderful in regula-ing the secretions of internal glandular organs, being equally good for persons of both sexes, irrespective of age--from infancy to old age. Again it has hypnotic action in bringing sound sleep if taken with cold water before going to bed in doses of 2 teaspoonfuls in a big cupful of water. Babies generally fall asleep after taking honey. It decreases flatulence and increases general metabolism and also the quantity of urine among children. Locally applied it stimulates the mucous surfaces, when in an atonic condition. It also acts as styptic.

Uses.—Honey is much used in the preparation of confections and electuaries and as an adjunct to decoc-tions, pills and powders. As a demulcent, honey and warm barley water are given internally in constipation and indigestion, in bronchial affections, asthma, chronic colds, troublesome coughs and sore-throat. It is a useful laxative for children who take it readily; and it is safer and far better for them than cane-sugar. A mixture of honey and distilled vinegar or lime-juice in equal parts melted together by gentle heat is an excel-lent adjunct to cough mixtures and for the coughs of children this combination with an equal quantity of

water with or without a few drops of paregoric is an excellent remedy. In severe cases of malnutrition with heart weakness and in cases of pneumonia, honey has been found to have a marked effect in reviving the heart's action and keeping the patient alive. Dr. G.N.W. Thomas cites (Lancet—Health, Feb. 1925) a case of pneumonia in which the patient consumed 2 lbs of honey during the illness; and there was an early crisis with no subsequent rise of temperature and an exceptionally good pulse. Instead of depending on milk and beef-extracts, as is done in so many cases of fever where the stores of sugar in the body are being rapidly used up, he suggests that honey should be given for general physical repair and above all for heart-failure and grapes constitute a valuable adjuvant. He further states.—"If sugar and preeminently honey be the most potent fuel to provide energy for muscle, should we not remember to give it for that all important and most vital muscle of all—the heart which gets no complete physical rest: other muscles, yes, but for the heart, no respite—until the tale is told." In the West, honey is coming into more and more extensive use in curing rickets, marasmus, malnutrition, scurvy and other conditions in which various malts, like cod-liver oils and other patent foods were formerly prescribed. In old age honey is specially useful in providing energy and heat to the body, which has little of it at that stage. In addition to it "it dries up the phlegm and clears the system of mucus which are the two necessary weaknesses that a man generally falls victim to in his old age." A teaspoonful or two in a cupful of

boiling water and taken while still warm is a refreshing and strengthening draught, giving much relief to those suffering from asthma. The use of honey internally and of sunlight externally to the body direct, has been eulogised as an ideal remedy to regulate the secretion of the internal glands and calcium metabolism. Practitioners of Hindu-Greeko-Arabic Schools of Medicine give honey to diabetics with many of their medicininal preparations. Honey contains a special protein secreted by the bee, which when inoculated into rabbits causes the formation of anti-bodies in the serum. The ferment and the special protein as well as the Vitamins in it, perhaps account for the beneficial action of honey in diabetes. Since honey consists of levulose it is not harmful in diabetes. A *paste* of it with flour is a popular application to promote maturation of abscesses and buboes. As an emollient, it is used as a *gargle* to cure aphthae in the mouth and as a vehicle to other agents; it is used as an *application* to the throat in thrush and pseudo-membranous deposits. As such it is also applied to sore nipples and to swollen mammae for drying up milk. With lime (*chuna*) it is used as an external application to the temples in headache, to the abdomen or round the navel in colic and to other painful parts, such as bruises and sprains. Honey applied to burns and scalds soothes and heals the ulcers rapidly. Rubbed over the teeth with charcoal powder it makes them clean and white as snow. Rubbed over greasy, dirty hands, it cleanses them rapidly.

36. **Mel Depuratum** (*Eng.*—Clarified honey) is the honey of Commerce, melted in a water-bath and

strained while hot through flannel previously moistened with water. It is a viscid translucent liquid of light yellowish or brownish-yellow colour, gradually becoming partially crystalline and opaque, of characteristic odour and of very sweet taste. It is demulcent, laxative, and nutritive; used chiefly as a vehicle for other medicines *e.g.* powders; it is also one of the best vehicles for medicines used for curing cough, asthma, fever, dyspepsia etc. It consists mainly of various kinds of sugars.

Monovalve Shell.—See Gasteropoda.

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37. MOSCHUS MOSCHIFERUS

(*Class* :—RUMINANTIA)

Sans.—Kasturi; Mriganabhi. *Eng.*—Musk. *Arab* & *Pers.*—Mishk. *Hind. Ben. Guz. Mah. Kon. Can. Tam. Tel.* & *Mal.*—Kasturi. *Duk.*—Mushk. *Cing.*—Urula. *Burm.*—Kado. *Malay.*—Jabat.

Source.—Musk producing animal (Musk deer) found generally in China, Russia Assam, Central Asia, and pine forests and the inaccessible cliffs above 8000 feet of the Himalayas.

Characters.—Musk is an inspissated and dried secretion from the preputial follicles of the musk animal. The animal on an average yields 2 to 4 drachms of the secretion. Each animal (male) yields one musk-pod 2 inches in diameter. It occurs in irregular, reddish black, slightly unctuous grains having a very strong diffusible odour and a bitter aromatic taste; soluble in alcohol (about 10 per cent), in water (50 per cent), also in ether and alkalies. The watery solution is faintly acid. When burnt it gives off urinous smell, leaving greyish ash

about 8 per cent. The smell entirely disappears when triturated with camphor, ergot, fennel, garlic, hydrocyanic acid or oily seeds or when long dried over the fumes of sulphuric acid. The odour returns on exposure to the air and moisture.

Constituents.—Ammonia, oleine, cholesterine fat, wax, gelatinous matter albuminous principles and ash. The ash is composed chiefly of the chlorides of potassium sodium and lime.

Varieties.—Bhavaprakash describes three varieties of musk, namely *Kamrupa*, *Nepala* and *Kashmira* musk. *Kamrupa* musk is said to be of black colour and superior to the others. It is probably China or Tibet musk brought *via* Kamroop. *Nepala* musk is described as of bluish colour and intermediate quality. *Kashmira* musk is of inferior quality.

Action.—A diffusible stimulant, anodyne, antispasmodic, expectorant, diaphoretic, diuretic and aphrodisiac. It acts principally on the heart and the nervous system. It exhilarates the mind and stimulates the brain, spinal cord and the peripheral nerves. It improves the circulation and raises arterial tension. It is a stimulant of the urino-genital organs. It is also reputed to stimulate the respiratory centre. It is eliminated in the urine, sweat and milk. When taken its first effects are to stimulate the vascular system and the brain. After a time it acts as a narcotic or soporific. Its effects are more manifest in excitable and nervous persons than in others. Dose is 5 to 10 grains. A pill may be made of 4 parts of musk and 1 part each of Acacia and liquorice all powdered.

Uses.—Musk is largely used in perfumery, its aroma being very lasting and holding more evanescent perfumes with it. In Medicine as a diffusible stimulant it is used in various adynamic fevers as typhoid, typhus and typho-remittent fevers and in all typhoid conditions as collapse of delirium tremens, coma, typhoid pneumonia etc. Under its use the patient gets refreshing sleep. As an antispasmodic it is given in tetanus, epilepsy, hysteria, colic, chorea, whooping cough, hiccup, asthma, laryngismus stridulus etc. "In removing rigidity of plague cases or meningitis, it has no equal"—(H. C. Sen). As an aphrodisiac it is given in combination with other aphrodisiacs in seminal weakness and impotence. In palpitation of the heart it is said to be useful. It is used in brain affections which are generally atonic. In the advanced stages of cholera infantum its good effects are due to its preventing effusion upon the brain. In mental and bodily fatigue leading to sleeplessness musk is very useful. It is contra-indicated in cases where there is a determination of blood to the brain or where there is any organic complication. In metastatic gout where the disease affects the stomach or the head, musk gives immediate relief. Dose is one-tenth of a grain for adults; and for children one-sixtieth to one-fortieth of a grain. In low fevers with prostration two grains of musk with two of *Makaradhwaja* are given every three hours with the addition of honey. In remittent fever of low type *Svalpa Kasturi Bhairava rasa* recommended in Rasendrasarasangraha, is given. It contains cinnabar, aconite, borax, nutmeg, mace, long pepper, black-pepper and musk, equal parts made into four-grain pills. In hoarseness and loss of speech a *linctus* known as

Mriganabhyadirabaleha pres cribed in Bhavaprakash made up of musk, cardamoms, cloves, cinnamon and dates in equal parts with honey and clarified butter is given. For general depression a pill made of 1 grain of musk and 3 grains of camphor is useful. As an alterative tonic in a variety of diseases, especially in chronic affections of the lungs supposed to be caused by deranged phlegm *Vasantatilakarasa* described in Rasendrasarasangraha is given; also in dyspepsia of phthisis and other grave conditions in weak subjects. It is prepared thus:—Take of prepared gold 1 part, talc and tin 2 parts each, Iron 3 parts, *rasasindura* and calcined pearls and coral, 4 parts each; mix them together, soak for seven days in the juice of sugar-cane, of the fruits Tribulus terrestris and of other strengthening vegetables. Enclose the mass in a covered crucible and roast it in a sand-bath for three hours. Lastly add to it four parts of camphor and four of musk and make into four-grain pills. Vishagbhushan Kaviraj A. C. Bisharad reports (Jour. Ayur., Aug. 1925) a case of paralysis of tongue in an old lady of 80 years, rapidly cured by a mixture of Musk, Makaradhwaja, reduced gold and mica, reduced coral and pearl 1 grain each, dividing the mixture in three equal doses and administered with the concentrated decoction of the roots of Sida cordifolia and the root-bark of Arjuna tree ½ tola each, in addition to *Lakshmibilasa rasa* one pill at 2 p. m. administered together with 12 grains of rock salt and 30 drops of ginger juice—(See under "Mica"). The following simple remedies are also very useful:—(1) Take of musk ½ drachm, dry ginger 2 drachms, asafoetida 4 drachms, black-pepper 2 drachms. Mix and reduce the whole to a

fine powder. Dose is 5 to 20 grains ; used in spasmodic and convulsive affections, such as asthma and hysteria. (2) Take of musk 1, Andropogon muricatus 5, cloves 5, ambergris 1, gold leaf 2, and honey 28 parts. Mix and make a pill mass. Dose is 1 to 2 grains ; used in colliquative sweats.

38. Mutella Occidentalis (*Sans.*—Indravadhi. *Hind.*—Indragopa; Birabavati, *Guz.*—Chomasana rata makhamali kida) are insects of a bright scarlet color, and velvetty, found in the commencement of the rains. They are very common in garden plants. The dried specimens, as found in the bazaar are of a saffron colour. In shape, they are nearly oblong less than $\frac{1}{2}$ inch long. In the form of *powder* or ashes it is a nervine tonic and antispasmodic and is used in paralysis. In colic it is given with nutmeg, An *ointment* of it made with wax is a useful application to swollen feet and hands.

39. Mylabris Cichorrii; M. Phalerata; M. Trianthema (*Eng.*—Telini fly. Chinese Blistering fly. *Hind.*—Telnimakhi. *Ben.*—Telinipoka. *Duk.*—Budhoki zerangi. *Mah.*—Telni-mashi. *Tam.*—Puis-tarinai. *Tel.*—Ejaloo) is an insect about 1 inch long and $\frac{1}{4}$ inch broad, found throughout India, especially Hyderabad and Deccan, China Southern Europe, South and East of Asia. The best season for collecting these insects is just before the setting in of the monsoon. They should be killed by the steam of boiling vinegar, thoroughly dried in the sun and preserved in well-stoppered bottles. The dried insect is used in medicine; it contains a fatty acid believed to be cantharidin 1 to 2 per cent. Its tincture (1 in 80) and liquor (1 in 10 of acetic acid) are used. Dose of the

tincture is 5 to 10 minims. As a vesicant it is very powerful and acts without pain and without irritation of the urinary organs. it is a very efficient substitute as a vesicant for the well-known European drug Cantharides. Other blistering flies exist in many parts of India, as Lytta Violacea in Centrai India and Mylabris pustulata, Mylabris indica etc., in the Peninsula. As a blistering agent, Telini fly is used generally in the form of plaster prepared as follows:—Take Telini fly finely powdered, white or black dammar, beeswax, and suet (mutton of goat) of each two ounces; liquify the three latter with a gentle heat, then remove from the fire and sprinkle in the Telini; mix the whole thoroughly and continue to stir the mixture while it is allowed to cool.

40. MYTILUS MARGARITIFERUS.

(*Class.*—Mollusca.)

Sans.—Mukta; Maracata. *Eng.*—Pearl. *Arab.*—Looloo. *Pers.*—Marwarid. *Ben.*—Mokta. *Hind. Guz. Mah.* & *Kon.*—Moti. *Tam. Can.* & *Cing.*—Muttu. *Tel.*—Mutiamu.

Source.—Found in general molluscs inhabiting shallow seas and sandbanks.

Characters.—The pearl mussel has nearly a semi-circular shell, greenish without and ornamented with the most beautiful nacre within. The nacre is employed in the arts and fine pearls are produced from the extravasa-tion of nacre.

Purification & Preparation.—Pearls are purified by being boiled in the juice of the leaves of Sesbania aculeata or of the flowers of Agati grandiflora; then prepared for medicinal use by being calcined in covered

crucibles and finally reduced to powder. Dose of the powder is 2 to 6 grains.

Action.—The powder is said to be highly stimulant, tonic and aphrodisiac. Other medicinal virtues ascribed to pearl are "laxative, sedative, emetic and nutritive." Pearl ash is chiefly carbonate and oxide of lime and acts as an antacid.

Uses.—The powder is used in heart-burn and bilious affections. *Mukta-bhasma* is useful in cough, phthisis and asthma, given twice a day with honey. Its chief use is in low fevers giving rise to burning sensation in the eyes, palms and soles, so common in India. It reduces the yellowish tinge in the conjunctivae and in the urine due to low fever and checks the burning during micturition. It is also used as a cerebral tonic in nervous diseases as chronic headache, epilepsy and other convulsive attacks. It is used in piles also, in leucorrhoea and spermatorrhoea and impotence. The powder is one of the ingredients in numerous Indian preparations used for impotence, heart disease, consumption etc. *Pittantaka rasa* described in Rasendrasarasangraha contains it together with several other substances and is a medicine useful in diseases supposed to be caused by deranged bile (*pitta*) such as dyspepsia, jaundice, biliousness, vomiting of bile etc. It is made up of nutmegs, mace, *jatamansi* root, root of Aplotaxis auriculata, *talispatra*, aconite, iron pyrites, iron, talc and realgar one part each, prepared pearls equal in quantity to all the above ingredients beaten together into a paste with the aid of water and made into four-grain pills. Another preparation containing pearls and known as *Vasantakusumakara rasa* (See "Corallium rebrum") is

given with sugar, honey and ghee in urinary diseases, impotence, gleet, diabetes, consumption and general debility. This medicine is regarded as a valuable alterative tonic in chronic gonorrhoea and spermatorrhoea and much prescribed in these complaints in combination with an extract called *Kusavaleha*. For consumption and other chest diseases a compound preparation made up of prepared pearl and mercury taken in equal parts triturated well in honey and water and then the whole mass dried over a sand bath till all the water has evaporated is recommended and given with sugar; the dose of the medicine is 1 to 3 grains. For seminal weakness a compound pill made up of *Mukta bhasma*, Panitis succenifer (succinum) 2, Red coral *bhasma* 2, nux-vomica 6, Daronicum scorpioides 15, Borneo camphor 10, cardamoms 15, Cinnamomum tamala 12, cloves 10, *Zande bidastara* (dried testicles of the beaver) 10, dry ginger 12, long pepper 10, musk 12 and sugar 50 parts, mix and make a pill mass; the dose is grains 10 to 15. *Dava-ul-mulk* is a confection made up of 29 ingredients, among which the important are pearls, amber, silk cacoons, silver leaves and musk. It is a nervine tonic giving strength to cardiac muscles and to the central nervous system. It is said to be very useful in functional affections of the heart. Dose is $\frac{1}{8}$ to $\frac{1}{2}$ tola given twice a day with milk. "This was given to a patient suffering from neurasthenia in $\frac{1}{4}$ tola doses. It did give tone to the nerves of the patient"—(Ind. Drugs Rept, Madras). *Javarish-i-lulu* is another preparation containing pearls, zedoary, Daronicum scorpiodes and cinnamon each 2 parts, Aquilaria agallocha, cacoons of silk moth, cardamoms,

saffron and cloves each 1 part, dried testicles of the beaver and *jatamansi* each ½ part and honey sufficient quantity, is used as a tonic and aphrodisiac. It is also given to prevent abortion. Dose is ½ to 1 drachm. In doses of 1 to 2 drachms it is useful in paralysis, asthma, epilepsy and impotence. A compound powder made up of *Silajit*, *Loha bhasma* and *Moti bhasma* each 2 parts, *trikatu* 3 parts and *triphala* 4 parts, is used in general debility, leucorrhœa, diabetes etc.

41. **Os Sepie** belonging to Mollusca Class (*Sans.*—Samudraphena. *Eng.*—Cuttle-fish bone. *Ger.*—Kuttelfishbeim. *Hind.*—Darya-ka-kaf. *Pers.*—Zuddulbaher kafdarya. *Guz.* and *Mah.*—Samudraphina. *Tam* and *Mal.*—Kadal noray. *Can.*—Samudranalige. *Tel.*—Sorupenka; Samudrapunuragu) is often found floating on sea-water. It is 1 to 3 inches in width and 5 to 10 inches in length. The skeleton is an oblong, elliptical or oval, flat substance, of whitish colour, very hard and brittle. It can be easily scratched with the nails and is highly pulverisable. It contains calcium carbonate 80 to 90 per cent, also phosphate and sulphate with silica. It is antacid like chalk; also astringent and local sedative. When powdered it is used as a dusting powder to relieve the pain of ear-ache or in otorrhoea. Its *paste* made with lime-juice is usefully applied in itches and other skin diseases; also with rose water to the body in prickly heat. The powder is an ingredient of tooth-powders; it is also used for polishing metals. A *medicated oil* prepared by boiling fine scraping of the bone in sweet or sesamum oil is useful for dropping into the ear in otorrhoea. A thin *paste* made of cuttle-fish bone and rock-

salt in rose water is a useful application to the eyes in conjunctivitis.

42. **Ostrea Edulis & O. Virginiana** (*Eng*:—The common Oyster shell; the bivalwe shell. *Fr*.—Nacre. *Ger*.—Osteon. *Port*.—Ostras. *Hind*.—Sipi. *Guz*.—Kalu) is a shell found in the Atlantic and Indian Ocean coasts. It has a small, hollow, ovate excavation in which the animal with a soft, fleshy suborbicular body is enclosed. The shell has a sort of hinge at one end and opens into two valves; one shallow and the other deep which is found adhering to the rock. The shell is hard, externally grey or dark-brown and rough and marked with lateral undulated streaks and internally white, smooth and shining. It contains calcium carbonate 85 to 95 per cent phosphate and sulphate of calcium and magnesium, oxide of iron, alumina and silica. The inner layer is chiefly used in preparing the ash, called *Kalu bhasma*. The *ashes* are antacid and alterative and used in cases of diarrhoea and chronic intestinal disorders. Dose is 5 grains. The animal is supposed to possess aphrodisiac properties and is therefore eaten raw or cooked. A paste of the shell is used as an absorbent for the same purposes as other shells. *Mother-of-pearl* (*Sans*.—Jaladima. *Ben*.—Jhinuk) is another species of mollusc, the shell of which is used for the same purposes as oyster shell. *Mukta-Sukti* (*Eng*.—Pearl Oyster. *Ben*. & *Hind*.—Mukta-Jhinuk. *Mah*. *Kon*. & *Guz*.—Motisimp) is another kind of shell which produces pearl. Medicinally its flesh is said to be "acrid, demulcent, excitive of digestive fire, palatable and beneficial in phthisis, *sula* and diseases of heart"—(N. N. Sen Gupta). The shell if used in medicine after purifica-

tion and reduction. Its ashes (*Sukti-bhasma*) is said to be beneficial in *sula*, dyspepsia, abdominal tumours, liver and spleen enlargements, and loss of appetite. The *lime* obtained by burning the hard cover of it possesses the same properties as that of *Sukti-bhasma*. *Jalasukti* (*Eng.*—Oyster *Ben.*—Jhinak) is a kind of aquatic animal. Its flesh is "acrid, demulcent, stomachic, digestive, cardiac, generative of the inclination for food and beneficial in abdominal tumours, *sula* aud diseases of poison"—(N. N. Sen Gupta).

43. Ovis Aries (*Sans.*—Mesha. *Eng.*—Sheep. *Hind. Ben. Duk. Guz.* & *Mah.*—Bhakra. *Kon.*—Bokodu. *Tam. Can.* etc.—Aedu) is an animal of ruminant and mammal class, covered with thick wooly hairs. The flesh of it is described to be "sweet, refrigerant, heavy of digestion, flatulent, nutritious and excitive of bile and phlegm"—(N. N. Sen Gupta.). See also Adeps Lanae and Sevum Praeparatum.

Phasianus—See Gallus.

Physeter Macrocephalus—See Cetaceum.

44. Piscis (*Sans.*—Matsya. *Eng.*—Fish. *Hind* & *Ben.*—Machchi. *Mah.* & *Kon.*—Maslee. *Tam. Can.* & *Mal. Meenu*) is an aquatic vertebrate animal with gills and fine inhabiting the waters of oceans, rivers, lakes, wells etc. In Ayurveda different properties have been ascribed not only to different fishes, but of the same fish living and growing in different waters. Fish from different sources are also recommended to be taken in different seasons as follows:—

Properties of Fish from different sources:—(1) River Fish is sweet to the taste, heavy of digestion, checks

Vayu, deranges *Pitta* and blood, heating and increases faecal refuse ; (2) Shallow-water fish is sweet but deranges *Pitta* ; (3) Tank and Pond fish is palatable and checks *Vayu* and *Pitta* ; (4) Large lake fish is heavy of digestion; (5) Fish near spring-water is similar in properties to No. 4. (6) Well-water fish deranges *Kapha*.

Fish from different Sources to be taken in Different Seasons:—(1) Fish from wells—in early winter. (2) Fish from pond—in late winter. (3) Fish from river—in Spring. (4) Fish from pond and tank—in Summer. (5) Fish from lakes—in Rains. (6) Fish near spring water—in Autumn.

Properties of Different Fishes.—(1) *Rohee fish*. (Lobea Rohu) is the best of all fresh water fishes, sweet to the taste but slightly bitter, increases vitality, checks *Vayu* but increases *Pitta*. (2) *Boyal fish* (Scioenidus Pama—Whiting) is carnivorous, increases *Kapha*, is strengthening, induces sleep, increases *Pitta* and deranges blood. If continued for sometime it induces leprosy and other skin diseases of the group (vide Hutchinson's fish theory of leprosy). (3) *Singhi fish* (Saccho-branchus) checks *Vayu*, deranges *Kapha*, is soothing, bitter, astringent, light and appetizer. (4) *Hilsa fish* (Indian Herring) is very sweet to the taste, due to excess of fat, deranges *Tridosha*. (5) *Shole fish* is astringent, slightly sweet and good to taste. (6) *Mourola fish* (Opio cephalus or Serpent-head) is tissue-producer, vitalising and galactogogue. (7) *Kai fish* (Anabus scandeous—Climbing perch) is sweet, soothing, appetizer, checks, *Vayu*, increases *Pitta* very slightly. (8) *Ban fish* (Indian Eel) checks *Vayu-Pitta*, is light and appetizing. (9) *Punti fish*—

large variety—is slightly bitter but sweet, cooling, appetizing and checks *Pitta* and *Kapha* ; small variety—is very bitter, pungent, very slightly sweet, light and checks *Vayu-Kapha.* (10) *Nata* or *Gorai fish* is sweet, bitter, astringent, checks *Tridosha*, is appetizer, light, strengthening, and good in goitre. (11) *Magur* or Cat fish (*Singhi* is another variety of cat fish) is light and strengthening, checks *Vayu*, increases *Kapha* slightly; (12) *Tangra fish* (Macrones Tangra, another variety of Cat fish) stimulates brain, decreases marrow, is appetizing and increases *Vayu-Pitta;* (13) *Bhetki fish* like Sea-fish, checks *Vayu-Pitta* and increases *Kapha*; (14) *Fish eggs* are very vitalising and soothing, tissue-repairer, light, increases *Kapha*. increase marrow and strength and is good in urethral discharges.

Preparations from Fish.—(1) *Sutki fish*—dried in the sun for preservation. It is difficult of digestion, constipating and not strengthening. (2) *Burnt fish*—The outer layer is burnt on charcoal when the inner flesh becomes more easily digestible, good and strengthening.

Modern Analysis of some Fish;—

	Percentage of		
Name of fish:	*Nitrogen.*	*Fat.*	*Salt.*
Rohu fish	17.5	16.4	2.36
Magur fish	18.9	5	1.80
Kai fish	23.6	2.84	2.99
Singhi fish	24.56	4.26	2.73
Ban fish	17.9	28.4	
Tangra fish	17.2	0.3	1.3

Fish therefore contains less proteid generally than beef or goat's meat except *Kai* and *Singhi* (cat fish). It

is more easily cooked and easily digested except those which contain much fat *e g.*, big *Rohu*, *Hilsa* or Indian Herring, *Ban* or Indian Eel, etc.—(Dr. Ashutosh Roy, "Jour. of Ayur" March 1926.)

Saccharum Lactis (Milk-sugar)—See Loctose under "Lactus."

Sanguisuga Medicinalis (The Leech)—See Hirudo Medicin alis.

Sepia Officinalis (Cuttle-fish)—See Os Sepie.

45. **Serpent Poison** (*Sans.*—Sarpavisha; Garala. *Eng.*—Cobravenom):—U. C. Dutt says that it has been used in Hindu medicine since a very recent period only. Because prescriptions containing it or references to it are found in modern works only such as Bhaishajya Ratnavali, Sarkaumudi etc. The poison of the black cobra is collected by making the reptile bite on a piece of stick or wood when the poison is poured out and received on a piece of plantain leaf. It is preserved in two ways. The liquid poison is allowed to congeal and dry in a cup or it is rubbed with a fourth part of mustard oil and spread out on a piece of plantain leaf. Thus treated it rapidly coagulates into a granular agglutinated mass of a yellowish-brown colour. When allowed to dry spontaneously, serpent poison coagulates into shining, crystalline yellowish-white granules. "*Cobra Poison*" Dr. H. C. Sen says "is a clear transparent fluid, varying in colour from a yellow to a straw tint to complete colourlessness. It has an acid reaction; its consistence varies from almost that of water to that of the denser portions of the white of an egg. Its specific gravity has a wide margin of variation. Specimens taken from several cobras and

mixed gave a specific gravity of 1·058. It has a very bitter taste, which is chiefly perceived along the margin of the tongue, and a faint sickly odour. *Daboa venom* is, however, without this bitter taste. When cobra poison is evaporated, it loses from 50 to 75 per cent. of water, and a yellowish substance, easily pulverisable, resembling gum arabic or dried egg albumen, is left behind. This dried substance possesses all the physiological properties of cobra poison, and it can be kept in this state for years. Chemically analysed by Dr. Armstrong the snake poison is found to contain Carbon 45·76; nitrogen 14.3; hydrogen 6.6; sulphur 2.5. When kept in the liquid state, cobra poison quickly becomes, first neutral and then alkaline, and a few feathery and cubic crystals will form. If preserved in a loosely corked test-tube, it will become cloudy, smell offensively and will swarm with bacteria in active movement; but it will still remain poisonous. The alkalinity now lessons and the reaction again becomes acid and the fluid then coagulates into a firm whitish, opaque substance, somewhat like the coagulated white of an egg, but of a lemon colour. If a small quantity of fluid is left uncoagulated it is poisonous and the washings of the coagulum are also paisonous. When water is added to the coagulum decomposition rapidly sets in, and the products cannot be distinguished from those of any other similar organic body. The changes are greatly dependent on the physical conditions to which the poison is subjected. Coagulation occurred in some poison kept at 29° C. in 10 days, whereas weeks were required when the temperature was 20° C. "Of all the stimulants" Dr. Sen states "the fresh venom

obtained from strong, young, black cobra is regarded as the most powerful, and its effects more lasting than those of other stimulants.......Different kinds of pills containing different proportions of snake venom are used in the collapse stage of fever, cholera and many other complaints from time immemoral. Its use is advised with the fresh juice of sugarcane, by Susruta in the treatment of ascites. It is irritant to the bowels and hepatic stimulant, so most of it is thrown out owing to its purgative action. It was known to the ancient Hindus that bile mitigates the action of snake-venom. This observation has been verified by Prof. Fraser. In Hindu medical works, many prescriptions contain snake-venom and bile of different animals. In some prescriptions arsenic is advised to be mixed with the venom. This also mitigates its action. Whatever the *modus operandi* may be "I am confident," Dr. Sen. says "that snake-venom is a powerful stimulant if administered by the mouth. I have shown Major Gibbons the beneficial effect of snake-venom treatment in many bad eases of plague. Civil Hospital Assistant Nrityalal Mookerjee, then Resident Medical Officer, Cambell Hospital, would not probably have recovered if the snake-venom pills were not administered to him in heroic doses as advised by Major Gibbons. Many men are living who have recovered from plague after the administration of snake-venom pills. Many of them feel the burning sensation even now, and have to put cold water on their head to relieve the burning sensation. I think in cases of blood-poisoning like plague, where red blood corpuscles undergo disintegration as in snake-poisoning, it is safer to use snake-venom by the mouth in preference

to hypodermic injections. Dr. Cunningham has shown that snake-venom causes disintegration of red blood corpuscles. Injection of snake-venom in plague cases should be done very cautiously, for the treatment itself is capable of adding fuel to the fire. I therefore prefer to use the venom, mitigated with bile or arsenic, by the mouth "—(Dr. H. C. Sen). As regards the action of snake venom on blood, whatever its ratio to blood may be, it has been found from experiments made by Dr. Cunningham that a unit of dried venem is capable of affecting at least 156,000 times its weight of blood to such an extent as to interfere with its respiratory property to a fatal extent. Cobra venom not only affects the respiratory property of blood, but likewise its coagulability, and at the same time acts on the red blood corpuscles as their solvent. Wonderful formulae containing snake-venom in different proportions are to be found in the *Rasa Granthas* or Works containing valuable prescriptions with *rasa* or mercury as one of their ingredients. The following are some prescriptions containing snake-venom and their uses.— (1) *Suchikabharana Rasa*:—Take of mercury, sulphur, oxide of lead, aconite and cobra venom 1 part each, mix and soak in the bile of the following animals.— (*a*) *rohu fish*; (*b*) wild boar; (*c*) peacock; (*d*) buffalo; (*e*) goat. The pills are made of the size of a mustard seed. It is generally administered with the juice of ginger. This prescription is especially indicated in low fevers complicated with looseness of the bowels. The dose is that can be taken up by the point of a needle. (2) *Brihat Suchikabharam Rasa*.—Take of

mercury, sulphur, oxide of lead, reduced black talc, aconite and cobra venom equal parts. Soak as above in the bile of five animals. The pills are generally made of the size of a mustard seed. These are generally administered with cocoanut water. This prescription is very useful in all fevers with brain complications and tendency to cardiac failure; also in cholera, choleraic diarrhoea and obstinate pneumonia. Cocoanut water should be administered freely. *Dahi* and soft rice are generally advised as diet, well cooked meat may also be given freely; there is no restriction about diet; the patient may have any food according to his liking. Dr. Sen used to give his patients plenty of *sherbats* (acidulated sugar solutions). To relieve the burning sensation he advised sesamum oil or sessamum paste to be applied to the burning parts. He says it is a mistake to be afraid of baths in these cases; over-cautiousness often spoils the action of the medicine. (3) *Aghore Nrisingha Rasa.*—Take of oxide of copper 1 part; reduced iron 1 part; oxide of tin 3 parts; prepared talc 4 parts; *swarna makshik* (iron pyrites), mercury, sulphur, and *manashila* (red sulphide of arsenic) 1 part each; snake venom 4 parts; ginger, long pepper and black pepper, altogether 4 parts, nux-vomica powder 22 parts, and aconite 88 parts; these are to be soaked in the bile of the above animals, *excepting that of goat*. Dr. Sen has used this preparation in chronic malarial fevers. It was particularly useful in those *cases where the liver showed a tendency to cirrhosis*. Cases of malarial fevers which do not yield to the combination of cinchona febrifuge and arsenic are said to yield to this prescrip-

tion. Often two or three pills suffice to check a very obstinate fever. The patient may have any food to his liking. Baths are strongly indicated. (4) *Ardhanariswar Rasa*:—Take of mercury, sulphur, aconite root and exsicated borax. Rub them together so long as the powder does not become black. Put this inside the mouth of a black cobra; use mud to close the mouth of the cobra. Put this head of the cobra, covered with salt, in an earthen vessel; cover this earthen pot, and apply mild heat for 12 hours. When this vessel is cool, take out the medicine and triturate it again. Two grains of this is used as snuff; when introduced into the left nostril the fever of the left side is said to disappear next day; when it is insufflated into the right nostril, this takes away fever from the right side of the body. Many people believe in its efficacy. If taken internally it produces the same febr fuge effect. It appears that mild heat through thick layers of salt does not destroy the snake venom. (5) *Kalanala Rasa* :—Take of black cobra poison, sulphur, white arsenic, aconite, black pepper, long pepper, ginger, borax, mercury, iron and copper oxides equal parts; soak them in the five kinds of bile as mentioned above, and make into one-grain pill with the juice of datura root. These are given in continued fever complicated with coma, delirium, cardiac and respiratory weakness etc. Dr. Sen further says that there are many other formulae containing different proportions of snake-venom. Snake-venom is said to be inert if administered by the mouth. It is inert as regards producing fatal results, for it is thrown out with the stools, because it is a stimulant

to the liver and glands of the alimentary tract. He says that there are hundreds of cases where snake-venom treatment has produced highly satisfactory results. Shafa-ul-Imraz states that the blood of a black snake (cobra ?) is the best application over the patches of leucoderma.

46. Sevum Praeparatum (*Eng*—Prepared Suet, B. P. *Arab.*—Samin. *Pers.*—Paiyah. *Hind. Ben. Guz. Mah. Duk.* & *Kon.*—Charbi. *Can.*—Kobbu. *Tam.*—Koshuppu. *Tel.*—Kovu) is the internal fat of the abdomen of the sheep from round the kidneys. It is prepared by cutting the fat in thin pieces, melting, straining and purifying or boiling in water and collecting the floating fat. It is a white, smooth, solid, unctuous mass, harder than lard, of a bland taste without odour, becoming rancid by keeping. It is insoluble in water and cold alcohol; is freely soluble in petroleum spirit. It contains stearin, palmitin and olein; salts of oleic, margaric and stearic acids, with a common base glycerin; also a trace of hercin, some coloring matter and odorous principles. It is an ingredient base for cerates, ointments, plasters and liniments, which are used as emollient dressings for blisters and as a protective for excoriated surfaces, chapped hands, cracks, fissures etc.

47. Spongia Officinalis (*Eng.*—the sponge. *Arab.*—Ispanga, *Pers.*—Aberamuradepa. *Hind.*—Badala; Mua. *Guz*—Vadulun. *Duk.*—Badalun) occurs as a light lump of a porous nature, yellowish-brown, soft, elastic and irregularly shaped. It is collected by divers from submerged rocks to which it adheres. When quite fresh, it is covered with a gelatinous substance which

must be removed to prevent putrifaction. Dry sponge consists of gelatine, albumen and iodine. Its ashes are obtained by burning sponge in a closed vessel. The ashes are used as deobstruent and astringent. Mixed with oil it is applied to swollen glands (goitre) owing to its containing iodine. It is also given internally in dysentery, diarrhoea and bowel complaints. Sponge is generally used for absorbing liquids, cleaning, washing, dilating cavities and for supporting prolapsed parts.

48. Squalus Carcharius (*Eng.*—White shark) is found on the sea-shores of Indian coastal towns. The oil extracted from its liver is called *Oleum Squalae* (*Eng.*—Shark liver oil. *Hind.* etc:—Machhi-ka-tel. *Tam.* etc.—Meenaenne). It is extracted by boiling *fresh* livers in water. It is a fine, amber coloured oily liquid with a fishy odour and taste like Cod liver oil but more strongly marked and more disagreeable. Left for a time it deposits a white granular substance "stearin" to which the name of *Squalin* has been applied. Dose is 1 to 4 drachms. It is richer in iodine and phosphorous than Cod liver oil, but contains less bromine and sulphur. As emulsion it is used in doses of 1 to 2 drachms three times daily as nutrient, demulcent and alterative, given in cachexia, pulmonary consumption, atrophy of body from any cause, scrofulous affections of the joints and bones especially rickets, scrofulous ophthalmia and scrofulous abscesses, suppurating glands, ulcerations, discharges from the nose or ears and skin diseases; in the mesenteric affections of children with tumefied belly with loose and clayey stools, in their obstinate constipations, in stricture of the rectum, in

chronic hydrocephalus, in the advanced stages of spasmodic coughs such as whooping cough and other lung affections and in chorea, epilepsy, neuralgia especially Tic Doulouroux, in chronic rheumatism causing atrophy, in some form of paralysis and in leprosy. In all the above cases the remedy should be persevered for weeks or even longer. The best time for administering the oil is immediately after or during a solid meal. Taken on an empty stomach it is almost sure to nauseate. Those who cannot retain it at any other time will sometimes retain a dose if given the last thing before going to bed. For disguising the nauseous taste and preventing subsequent eructations, a good plan is to take a few grains of common salt, both immediately before and after a dose. As a vehicle a little omum water, or a little orange wine, or quinine solution or lime juice or hot strong coffee without milk have been recommended. The vehicle should not exceed a table-spoonful with, at first a teaspoonful of the oil, gradually increased to a table-spoonful, so that the whole may be swallowed at a single draught. The diet during the course of the oil should be plain and nutritious:—bread, fresh meat roasted or boiled, poultry, game etc., with a fair proportion of vegetables and fruits and a moderate quantity of liquids. All rich articles of food as pastry, fat, meat, cream etc., should be avoided. During its use the patient should be as much as possible in the open air and take gentle exercise.

49. **Tiriake Faruka** (*Arab.* & *Bom.*—Tiriak-i-faruka) occurs as an oily unctuous semifluid of a dark-blue or brownish-dark colour, sweet in taste and odour, resembling that of liquorice-liquor. It is tonic, stimulant and

antispasmodic used internally in myxoedema, beriberi, anasarca, rheumetism, vomiting, purging, tetanus, seminal debility etc. It is highly recommended in the collapse stage of cholera and as an antidote to poisoning by venomous animals. Opium is said to be one of the ingredients in its composition.

50. Urines (*Sans.*—Mutra) of various animals are used in medicine and their properties are described in Sanskrit works. Of these *cow's urine* is much used both internally and externally. Internally it is highly recommended for cirrhosis of the liver in doses of one to two ounces. It is also described as laxative and diuretic and used in the preparation of various medicines such as *Punarnava mandura, Marichadya taila* for enlargements of the abdominal viscera, painful dyspepsia, ascites, anasarca, jaundice, leprosy, chronic prurigo and other obstinate skin diseases. It is recommended by Chakradatta as a vehicle for castor oil given as a purgative. In congestive fever with constipation, flushed face and headache, an ounce of fresh and warm cow's urine is given as a domestic medicine. It is used *externally* in the purification and roasting of various metals and in the preparation of oils, decoctions etc. *Goat's urine* is given internally as a laxative and diuretic ; it is given mixed with a compound decoction of *Jatamansi* root, *dasamula* etc., recommended in Susruta in the treatment of epilepsy. *Ox's urine* (*Brishamutra*) is described as " stomachic and alleviative of jaundice, worms, oedema and diarrhoea." *Horse's urine* is said to be " bitter, stimulant, stomachic, purgative, excitive of bile, alleviative of wind and beneficial in phlegm, ringworm and intestinal worms"—(N. N. Sen Gupta).

51. **Viverra Civetta** (*Sans.*—Gandha marjora. *Eng.*—Civet cat. *Arab.*—Gatt. *Bom.* & *Hind.*—Ladana; Zawad-bander. *Ben.*—Khatase; Mach-bhander. *Tam.* & *Tel.*—Sawad-pune. *Mah.* & *Kon.*—Punuga-majar. *Can.*—Punugin Bekku) is a small animal of the feline species found in Malabar, south Asia and Africa, resembling a cat, the unctuous secretion of which is used in medicine. It is an odorous secretion contained in the pouch of the Civet cat, situated between the anus and the genital organs. It is a dark coloured lumpy mass resembling *Rasavanti* in appearance and consisting of a homogeneous extract mixed with small hair, fibres and pieces of wood and ammonia. Its constituents are free ammonia, resin, fat, extractive matter and volatile oils to which its odoriferous properties are due. It is used medicinally in the form of extract and liniment, the dose of the extract is from 2 to 5 grains. The usual tincture consists of 4 ounces of Civet to 1 gallon of alcohol. It is stimulant, aphrodisiac and antispasmodic given in hysteria and nervous exhaustion. It is mainly popularly used for perfumery.

THE

INDIAN MATERIA MEDICA

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APPENDIX I

Drugs according to Therapeutical & Physiological Actions.

Abortifacients.—Abroma augusta; Achyranthes aspera; Anona squamosa; Carica papaya; Crotolaria juncea; Daucus carota; Euphorbia resinifera; Gossypium herbaceum; Hydrargyrum; Luffa echinata, Morinda citrifolia; Moringa pterygosperma; Nerium odorum, Peganum harmala; Plumbago rosea; Plumeria acuminata; Pyrethrum indicum and Santalum album.

Adipogenous Agents.—Convolvulus paniculata; Desmodium triflorum; Glycyrrhiza glabra; Gymnema balsamicum and lactiferum; Leptademia spartium and Tinospora cordifolia.

Alteratives.—Acorus calamus; Albizzia lebbek; Ammonium chloride; Asclepias asthmatica and giganta; Bauhinia variegata; Calotropis gigantea and procera; Cassia tora; Celastrus paniculata; Cephalandra indica; Cichorium intybus; Clerodendron inerme; Coccinea indica; Cocculus cordifolia; Eclipta prostata; Fumaria officinalis; Gynocardia odorata; Hemidesmus indicus; Hydrargyrum and several of its compound preparations; Hydrocotyle asiatica; Lepidium sativum; Mimosa pudica; Myrica species; Plantago major; Podophyllum emodi; Pongamia glabra; Smilax chinensis; Solanum dulcamara; jacquini and nigrum; Spermacosae hispida; Sulphur; Swertia chirata; Taraxacum officinale; Uraria lagopoides; Vernonia cinerea; Withania somnifera.

Anaesthetics.—Acacia farnesiana; Acorus calamus; Erythroxylon coca (cocaine); Ferula asafoetida; Gymnema sylvestre; Helleborus niger (helleborein); Herpestis monniera; Melia azedarach; Nardostachys jatamansi; Picrorrhiza kurroa; Saraca indica.

Analeptics.—Bambusa arundinacea; Boerrhavia diffusa; Cocculus cordifolia; Cynodon dactylon; Desmodium triflorum; Emblica officinalis; Glycerrhiza glabra; Glycine labialis; Gymnema aurantiacum, balsamicum, lactiferum and spartum; Hemidesmus indica; Hydrocotyle asiatica; Mimusops elengi and hexandra; Nymphaea lotus and pubescens; Phaseolus trilobus; Prunus amygdalus, communis, domestica, padum, padus and serotina; Terminalia chebula; Vanda roxburghii; Vitis vinifera.

Anaphrodisiacs.—Agati grandiflora; Camphora officinarum; Colchicum luteum; Hyoscyamus niger; Myrica nagi; Nelumbium speciosum; Nicotina tabacum; Papaver somniferum; Saussurea lappa.

Anodynes.—Amomum subulatum; Anisi fructus; Aquilaria agallocha; Berberis aristata; Bombax malabaricum; Calophyllum inophyllum; Cedrus deodara; Curcuma longa; Feronia elephantum; Foeniculum vulgare; Glycerrhiza glabra; Myrica sapida; Nauclea cadamba; Nelumbium speciosum; Nymphaea lotus and stellata; Saraca indica; Saussurea lappa; Shorea robusta; Typha angustifolia.

Anthelmintics.—Achyranthes aspera; Adhatoda vasica; Allium sativum; Aloe species; Ananas sativus; Areca catechu; Artemesia indica; Azadirachta indica; Butea frondosa; Caesalpinia bonduc; Calotropis gigentea;

Carica papaya ; Chenopodium ambrosioides (*ankylostoma*); Citrullus colocynthis; Cleome viscosa ; Clerodendron infortunatum ; Colycopterus floribunda ; Costus speciosus; Croton tiglium ; Cucurbita maxima ; Embelia ribes ; Erythrina indica ; Ferula asafoetida ; Gisekia pharnaceoides ; Helleborus niger : Holarrhena antidysenterica ; Juglans regia (*tapeworm*) ; Lagenaria vulgaris : Mallotus phillipinensis ; Melia azedarach ; Moringa pterygosperma ; Mucuna pruriens : Nyctanthus arbor-tristis ; Ocimum sanctum ; Piper nigrum ; Psoralia corylifolia ; Ptychotis ajowan ; Punica granatum : Pyrethrum indicum ; Quassia excelsa : Quisqualis indica : Salvadora persica : Tribulus terrestris ; Vernonia anthelmintica ; Vitex negundo.

Antidiabetics.—Aconitum ferox ; Asphaltum ; Cassia auriculata, fistula and sophora ; Citrus aurantium and vulgaris ; Cocculus cordifolia and villosus ; Emblica officinalis ; Eriodendron aneractuosum ; Eugenia jambolana; Ficus Benghalensis and glomerata ; Gudumal ; Lodoices seychellaram; Mica (*bhasma*).

Antidotes.—Albizzia lebbek ; Cordia myxa; Curcuma longa ; Iohnocarpus frutescens ; Pterocarpus santalinus ; Rubia cordifolia ; Strychnos potatorum ; Vitex negundo.

Antiemetics.—Andropogon muricatum : Citrus medica ; Cynodon dactylon ; Erythroxylon coca (cocaine) ; Eugenia jambolana ; Hordeum vulgare ; Mangifera indica ; Melia azedarach ; Myrtus caryophyllus; Punicum granatum ; Strychnos nuxvomica ; Zizyphus jujuba.

Antigalactagogues:—Cedrus deodara ; Cocculus cordifolia ; Cyperus rotundus ; Hemidesmus indicus ;

Holarrhena antidysenterica, Picrorrhiza Kurroa; Stephania hernandifelia; Zingiber officinale.

Antiparasitics:—Acacia catechu: Achyranthus sativum: Acorus calamus: Albizzia lebbek: Allium aspera; Alstonia scholaris: Amomum subulatum: Andropogon citratis: Anona squamosa: Anthemis nobilis: Antimony sulphide; Aplotaxis auriculata: Argemone Mexicana; Arsenous bisulphuret and trisulphuret; Baliospermum montanum; Balsamodendron pubescens; Berberis aristata; Bryophyllum calycinum; Camphora officinanum; Cassia tora, sophora, fistula, and alata: Cedrus deodara; Cinnamomum cassia: Cleome viscosa; Cocculus suberosus and cordifolia: Copper sulphate; Coriandrum sativum; Curcuma longa: Cyperus rotandus; Embelia ribes; Emblica officinalis; Erythrina indica; Ferri sulphas; Ficus benjamina and glomerata; Gardenia gummifera; Glycerrhiza glabra: Holarrhena antidysenterica; Indigofera tinctoria; Ipomoea turpethum; Jasminum grandiflorum; Jatropha curcas: Justicia adhatoda; Kalanchoe laciniata; Luffa amara; Mallotus philipinensis; Melia azedarach; Moringa pterygosperma; Myrica sapida; Nardostachys jatamansi; Nerium cdorum; Nicotina tabacum; Ocimum basilicum; Piper cubeba and longum; Pongamia glabra; Pterocarpus santalinus; Quassia excelsa; Randia dumetorium; Ricinis communis; Salvadora persica; Saussurea lappa and auriculata; Semicarpus anacardium; Shorea robusta; Sinapis alba; Sulphur; Symplocos racemosa; Taraktogenos kurzii; Terminalia arjuna and chebula; Trichosanthes dioica; Vateria indica; Withania somnifera; Zanthoxylum budrunga.

Antiperiodics.—Aconitum heterophyllum; Alstonia scholaris; Andrographis paniculata; Berberis aristata; Caesalpinia bonduc; Clerodendron inerme; Cocculus cordifolia; Coscinum fenestratum; Daemia extensa; Eucaliptus globulus; Helleborus niger; Holarrhena antidysenterica; Melia azedarach; Ocimnm sanctum; Oldenlandia herbacea; Picrorrhiza kurroa; Sulphur; Swertia chirata; Trichosanthes cucumerina and dioica; Vernonia cinera; Viola odorata :

Antiphlogistic.—Hibiscus populnea, Nerium odorum : Tabernaemontana coronaria.

Antipyretics :—Aconitum ferox ; Alstonia scholaris, Azadirachta indica; Berberis aristata ; Cocculus cordifolia; Coriandrum sativum; Coscinum fenestratum ; Daemia extensa; *Dashamula* roots ; Emblica officinalis ; Grewia asiatica ; Hemidesmus indicus ; Ocimum sanctum ; Oldenlandia herbacea; Picrorrhiza kurroa; Prunus padus; Rubia cordifolia; Salvadora persica; Santalum album; Terminalia chebula and belerica; Vernonia cinera; Viola odorata.

Antirheumatics :—Andropogon muricatum; Elettaria cardamomum; Glycerrhiza glabra; Gymnema balsamicum; Hedysarum gangeticum; Santalum album; Solanum indicum and xanthocarpum; Uraria lagopoides.

Antiscorbutics :—Aegle marmelos; Carica papaya; Citrus acida; Lycopersicum esculentum; Mangifera indica; Moringa pterygosperma; Musa sapientum; Pyrus malus; Tamarindus indica.

Antiseptics—Acacia catechu; Alstonia scholaris; Antimony sulphide ; Asparagus racemosus ; Barleria prionitis; Bombax malabaricum; Caesalpinia sappan; Calophyllum inophyllum ; Cassia fistula ; Cocculus

cordifolia; Curcuma longa; Emblica officinalis; Flacourtia ramontchi; Glycerrhiza glabra; Gymnema sylvestre; Holarrhena antidysenterica; Hygrophila spinosa; Ichnocarpus frutescens; Melia azedarach; Mimosa pudica; Momordica charantia; Nymphaea stellata; Plumbago zeylanica; Pongamia glabra; Pterocarpus santalinus; Randia dumetorium; Rubia cordifolia; Stercospermum suaveolens; Swertia chirata; Terminalia chebula and belerica; Tribulus terrestris; Trichosanthes dioica; Woodfordia floribunda.

Antispasmodics :—Allium sativum; Camphora officinarum; Cannabis indica; Castoreum; Chenopodium ambrosiodes; Cinnamomum camphora; Crocus sativus; Datura alba; Erythroxylum coca (cocaine); Ferula asafoetida; Moschus moschiferus; Nardostachys jatamansi; Papaver somniferum; Sodii biboras; Stannum; Styrax benzoin; Zinci oxidum.

Aperients.—See Purgatives.

Aphrodisiacs :—Amorphophallus campanulatus; Asparagus adscendens and racemosus; Aurum; Bambusa arundinacea; Bassia latifolia; Bombax malabaricum; Camphora officinarum; Cannabis sativa; Castoreum; Celastrus paniculatus; Crocus sativus; Cynodon dactylon; Dolichos pruriens; Echinops echinatus; Eulophia vera; Ferula asafoetida; Ferrum; Glycine labialis; Gossypium indicum; Gymnema balsamicum and lactiferum; Herpestis monniera; Hygrophila spinosa; Ipomoea digitata; Juglans regia; Lepidium sativum; Leptademia spartum; Mimusops hexandra; Moschus moschiferus; Mucuna pruriens; Mutella occidentalis; Myristica fragrans; Nardostachys jatamansi; Papaver

somniferum; Pedalium murex; Phaseolus roxburghii; Piper betle; Pistacia khinjuk; Pyrethrum indicum; Rhus succedania; Saussurea lappa; Shorea robusta; Sida cordifolia; Sinapis juncea; Solanum indicum; Stannum (*bhasma*); Strychnos nuxvomica; Tamarix articulata; Tribulus terrestris; Trigonella foenum-graecum; Vitis vinifera; Withania somnifera.

Astringents.—Acacia arabica and catechu; Aconitum heterophyllum; Aegle marmelos; Ailanthus malabarica; Alstonia scholaris; Alumen; Bauhinia variegata; Blumea balsamifera and densiflora; Bombax malabaricum; Butea frondosa; Careya arborea; Cinnamomum cassia; Copper sulphate; Cyperus rotundas; Diosypros embryopteris; Elephantopus scaber; Emblica officinalis; Eugenia jambolana; Feronia elephantum; Ferri sulphuretum; Ficus Bengalensis; Garcinia mangostana; Gossypium indicum; Heliotropium indicum; Holarrhena antidysenterica; Ixora coccinea; Lawsonia alba; Mangifera indica; Memecylon edule; Mesua ferrea; Mimusops elengi; Morinda citrifolia; Nelumbium speciosum; Odina wodier; Papaver somniferum; Plumbum salts; Psidium guyava; Pterocarpus santalinus; Punica granatum; Quercus infectoria; Rhus Coriaria; Saraca indica; Sesbania grandiflora; Shorea robusta; Spondias mangifera; Strychnos potatorum; Symplocos racemosa; Syzgium jambolanum; Terminalia chebula and belerica; Urtica dioica; Woodfordia floribunda; Wrightia antidysenterica; Zincum salts.

Bitters & Bitter Tonics.—Aconitum heterophyllum; Ailanthus excelsa; Alstonia scholaris; Andrographis paniculata; Berberis aristata; Boerhavia diffusa; Caesal-

pinia bonduc; Calamus rotung; Cardiospermum halicacabum; Cocculus cordifolius; Corchorus capsularis and trilocularis; Gentiana kurroa; Holarrhena antidysenterica; Luffa amara: Melia azadirachta; Momordica charantia; Ophiorrhiza mungos; Picrorrhiza kurroa; Quassia excelsa; Sphaeranthus hirtus & indicus; Swertia chirata; Vanda Roxburghii.

Carminatives.—Acorus calamus; Andropogon citratis, nardas, martini & muricatus ; Anethum sowa; Anthemis nobilis; Aquilaria agallocha; Balsamodendron mukul; Boswellia serrata; Calophyllum inophyllum; Capsicum frutescens; Cedrus deodara; Cinnamomum iners, malabaricum, cassia etc.; Coriandaum sativum; Crocus sativus; Cuminum cyminum; Curcuma longa; Elettaria cardamomum; Embelia ribes; Emblica officinalis ; Ferula asafoetida ; Foenaculum vulgare; Grewia asiatica; Hyssopus officinalis; Illicium verum; Liquidambar orientalis; Melaleuca leucadendron; Mesua ferrea; Mimusops indica; Moringa pterygosperma; Myrica sapida; Myristica malabarica; Myrtus caryophyllus; Nardostachys jatamansi; Nigella sativa; Origanum marjorana; Peucedanum graveolens; Pinus longifolia; Piper nigrum longum, betle & aurantiacum; Ptychotis ajowan; Punica granatum; Saussurea lappa; Shorea rubusta; Sida cordifolia ; Strychnos potatorum; Tamarindus indica; Tectona grandis; Terminalia chebula & belerica; Trigonella foenum-graecum; Zingiber officinalis.

Cathartics.—See Purgatives.

Caustics.—(the ashes of the following plants are used as caustics for opening abscesses):—Abrus precatorius; Achyranthes aspera; Alstonia scholaris; Butea

frondosa; Caesalpinia bonduc; Calotropis giganta; Cassia fistula; Cedrus deodara; Echites dichotoma; Erythrina indica; Euphorbia nerifolia; Gmelina arborea; Holarrhena antidysenterica; Justicia adhatoda; Luffa pentandra; Musa sapienta; Nerium odorum; Plumbago zeylanica; Pongamia glabra; Shorea robusta; Stercospermum suaveolens; Symplocos racemosa; Terminalia species.

Cholagogues.—Ammonium chloride; Bombax malabaricum; Calotropis gigenta; Carthamus tinctorius; Cascaria esculenta; Cassia lanceolata; Cichorium intybus; Cocculus cordifolius; Cosmostigma racemosa; Eclipta alba; Fel bovinum purificatum; Glycerrhiza glabra; Ipomoea digitata or paniculata; Lawsonia alba; Moringa pterygosperma; Nymphaea stellata; Pinus longifolia; Podophyllum emodi; Sesamum indicum; Sodium chloride; Trichosanthes cucumerina.

Counter Irritants—Ammonia baccifera; Berberis aristata; Brassica juncea; Capiscum species; Cassia fistula; Cleome viscosa; Cuminum cyminum; Cyperus rotundus; Hola rrhena antidysenterica; Melia azedarach; Moringa pterygosperma; Piper longum & nigrum; Plumbago zeylanica & rosea; Pongamia glabra; Salvadora persica; Semecarpus anacardium; Sinapis alba; Zingiber officinale.

Demulcents.—Abelmoschus esculentus; Acacia arabica, farnesiana, senegal and speciosa; Amomum subulatum; Aquilaria agallocha; Cocculus villosus; Cocos nucifera; Dipterocarpus turbinatus; Glycyrrhiza glabra; Gynocardia odorata; Hedysarum alhagi; Ipomoea digitata; Linum usitatissimum; Lycopodium clavatum; Mimosa species; Nymphaea lotus & stellata; Ocimum gratissimum

& basilicum; Panicum frumentaceum; Parmelia perlata; Pedalium murex; Plantago ispagula; Plumbago ovata; Poa cynosuriodes; Rhus succedanea; Saccharum species; Sida species; Symplocos racemosa; Tribulus terrestris; Typha angustifolia; Vitis vinifera.

Desiccants.—Bole armeniac; Kaolinum; Lycododium clavatum; Plumbi carbonas; Quercus infectoria; Zinci oxidum.

Diaphoretics and Sudorifics:—Aconitum ferox; Artemesia absinthium: Boerrhavia diffusa and procumbens: Calotropis giganta; Camphora officinarum; Capsicum frutescens; Carthamus tinctorius; Colchicum luteum (sudorific); Elephantopus scaber (sudorific); Euphatorium ayapana; Hemidesmus indicus; Hordium vulgare; Lactuca scariola; Mesua ferrea; Mimosa suma; Moringa pterygosperma; Naregamia alata; Papaver somniferum: Potassium nitras; Quassia excelsa; Ricinis communis; Sesamum indicum; Sulphur; Symplocos racemosa; Zizyphus jujuba.

Disinfectants:—Achyranthes aspera; Balanites Roxburghii; Calotropis gigantia; Caesalpinia bonduc; Cissempelos bernandifolia; Cocculus cordifolia; Gloriosa superba; Heliotropium indicum; Picrorrhiza Kurroa; Pongamia glabra; Pterocarpus santalinus; Sanseviera zeylanica; Santalum album; Sodium chloride impura; Tragia involucrata; Trichosanthes dioica; Vanda roxburghii.

Diuretics:—Achyranthes aspera; Agati grandiflora; Asparagus racemosa; Asphaltum; Azima tetracantha; Boerrhavia diffusa and repens; Celastrus paniculatus; Cissampelos pareira and bernandifolia; Citrullus vulgaris;

Clitoria turnatia; Cecculus cordifolius; Costus speciosus; Cubeba officinale; Cucumis sativus; Erigeron canadense; Glycerrhiza glabra; Hemidesmus indicus; Hygrophila spinosa; Lycopodium clavatum; Michelia champaca; Moringa pterygosperma; Nardostachys jatamansi; Panicum frumentaceum; Phyllanthus niruri; Physalis alkekinji; Piper cubeba; Plantago ispagula; Poa cynosurioides; Portulaca cleracca & quadrifida; Potassium nitras; Raphanus sativus; Saccharum officinarum, spontanum and sara; Santalum album; Scilla indica; Sodium salts; Solanum indicum & xanthocarpum; Taraxacum officinale; Tribulus terrestris; Urginea indica; Viola odorata; Zingiber officinalis.

Ecbolics.—See "Abortifacients."

Emetics.—Abrus precatorius; Acorus calamus; Alangium decapetalum; Alumen (repeated doses), Anthemis nobilis; Barringtonia acutangula; Bombax malabaricum; Brassica juncea; Calotropis giganta; Cassia tora; Cephalandra indica; Citrullus colocynthis; Clitorea ternatea; Copper sulphate; Crinum deflexum; Crotalaria juncea; Entada scadens; Euphatorium ayapana; Holarrhena antidysenterica; Lagenaria vulgaris; Luffa species; Mallotus phillippinensis; Mel; Melia azedarach; Naregamia alata; Nicotina tabacum; Plumbago zeylanica; Podophyllum emodi; Randia dumetorium, Scilla indica; Sinapis alba; Sodium chloride; Strychnos potatorum (fruit 30 grs); Tylophora asthmatica.

Emmenagogues.—Abroma augusta; Aloes indica; Ammonium chloride; Anthemis nobilis; Balsamodendron myrrh; Blumea lacera; Carica papaya; Cinnamomum

cassia ; Cubeba officinalis ; Erythroxylon coca ; Ferrum ; Ferula asafoetida ; Gossypium herbaceum ; Lycopodium clavatum ; Nardostachys jatamansi ; Ruta graveolens ; Strychnos nux-vomica ; Trigonella foenum-graecum.

Emollients.—(See also "Demulcents"):—Acacia catechu, farnesiana & senegal ; Acipenser huso ; Adeps ; Buchanania latifolia ; Cera alba ; Cetaceum ; Diosypros glutinosa ; Ficus carica ; Hibiscus rosa sinensis ; Mel ; Sevum preparatum, Shorea robusta ; Terminalia arjuna & tomentosa ; Zizyphus jujuba.

Errhines.—Achyranthes aspera & fruticosa ; Aconitum heterophyllum ; Acorus calamus ; Allium sativum ; Balanitis Roxburghii ; Bassia latifolia ; Borassus flabelliformis ; Calotropis giganta & procera ; Cardiospermum halicacabum ; Citrus medica ; Clitoria ternatea ; Embelia ribes ; Ferula asafoetida ; Garcinia xanthochymus ; Gymnema sylvestre ; Jasminum grandiflorum ; Moringa pterygosperma ; Nerium odorum ; Nicotina tabacum ; Ocimum sanctum & album ; Piper longum & nigrum ; Pongamia glabra ; Pyrethrum indicum ; Salvadora oleoides & persica ; Shorea robusta ; Sinapis alba ; Sodium chloride.

Expectorants.—Acalypha indica ; Adhatoda vasica ; Allium sativum ; Ammonium chloride ; Balsamodendron myrrh & opobalsamum ; Bambusa arundinacea ; Barringtonia acutangula ; Cactus indicus ; Calotropis giganta & procera ; Camphora officinarum ; Cocculus cordifolius ; Corallium rubrum (calcined) ; Cubeba officinalis ; Dipterocarpus turbinatus ; Erythroxylon coca ; Eucalyptus globulus ; Euphatorium ayapana ; Ferula asafoetida ;

Glycerrhiza glabra and glandulifera; Hydrocotyle asiatica; Ipomoea digitata; Justicia adhatoda; Lactuca scariola; Mel; Myrica sapida; Mytilus margaritiferus (calcined); Naregamia alata; Nelumbium speciosum; Nicotina tabacum; Opuntia dillenii; Pimpinella anisum; Pinus sylvestris; Piper longum & cubeba; Pistacia integerrima & lentiscus; Rhus succedanea & kakrasingi; Saccharum officinarum; Scilla indica; Solanum indicum, xanthocarpum & jacquinii; Styrax benzoin; Tylophora asthmatica; Urginea indica & martiema; Viola odorata.

Galactafuges.—Jasminum sambac; Phaseolus mungo.

Galactagogues.—Abelmoschus esculantus; Andropogon muricatum; Cocculus Cordifolius; Oryza sativa; Poa cynosuriodes; Saccharum officinarum, cylindricum &; spontaneum.

Haematinics—Aegle marmelos; Asparagus racemosus; Caesalpinia bonduc; Calotropis giganta; Cephalandria indica; Crataeva religiosa; Ferric salts Gymnema sylvestre; Moringa pterygosperma; Plumbago zeylanica; Pongamia glabra; Pothos officinalis; Premna serratifolia; Sanseviera zeylanica; Sesbania aculeata; Solanum indicum & xanthocarpum; Terminalia arjuna, bellerica & chebula.

Haemostatics & Styptics.—Aconitum heterophyllum; Acorus calamus; Aegle marmelos; Andropogon muricatum; Asclepias curassavica; Berberis aristata; Bombax malabaricum; Crocus sativus; Desmodium triflorum; Glycerrhiza glabra; Gmelina arborea; Holarrhena antidysenterica; Jatropha curcas; Mangifera

indica ; Mel ; Mesua ferrea ; Nelumbium speciosum ; Nymphae stellata ; Plantago ispagula ; Plumbago zeylanica ; Premna serratifolia ; Punica granatum; Sodium chloride ; Solanum xanthocarpum and indicum ; Stereospermum suaveolens ; Symplocos racemosa ; Terminalia chebula ; Tribulus terrestris ; Uraria lagopoides.

Hypnotics.—Cannabis indica ; Lactuca scariola ; Myristica fragrans and officinalis ; Papaver somniferum. Strychnos nux-vomica.

Lactagogues,—See "Galactagogues".

Lactifuges.—See "Galactafuges".

Lithontriptics.—Asphaltum ; Barleria prionitis ; Butea frondosa ; Calotropis giganta ; Capparis trifoliata ; Coleus aromaticum ; Copper sulphate ; Crataeva religiosa; Emblica officinalis ; Euphorbia nerifolia ; Ferri sulphuretum ; Ferula asafoetida ; Herpestis monniera ; Nymphaea stellata ; Poa cynosuriodes ; Saccharum spontaneum ; Saxifraga ligulata ; Scindapsus officinalis ; Sodium chloride impura ; Terminalia arjuna, chebula and belerica ; Tribulus terrestris ; Vanda Roxburghii.

Mydriatics.—Datura alba (daturine) ; Solanum nigrum (solanine).

Myotics.—Papaver somniferum.

Narcotics.—Artemesia absinthium ; Cannabis indica; Cocculus indicus ; Lactuca scariola ; Melia azedarach ; Myristica malabarica ; Nicotina tabacum ; Papaver somniferum.

Parasiticides.—See "Antiparasitics."

Pectorals.—Achyranthes aspera; Andropogon citratis, iwarancusa, martini and muricatus; Asparagus racemosus; Boerhavia diffusa; Cassia fistula, lanceolata and sophora; Clitoria ternata; Desmodium triflorum; Embelia ribes; Glycine labialis; Hemidesmus indicus; Hygrophila spinosa; Ichnocarpus frutescens; Ipomoea digitata; Mucuna pruriens; Myrica sapida; Ocimum sanctum and hirsutam; Ricinis communis; Ruta graveolens; Sida cordifolia and spinosa; Solanum indicum, xanthocarpum and nigrum; Strychnos nux-vomica; Tragia involucrata; Tribulus terrestris; Uraria lagopoides; Vitex negundo; Vitis vinifera.

Purgatives and Laxatives.—Abrus precatorus; Achyranthes aspera; Aegle marmelos; Aloes barbedensis and litoralis; Baringtonia acutangula; Boerhavia procumbens; Bombax malabaricum; Butea frondosa; Caesalpinia bonduc; Calotropis gigantea; Canscora decussata; Cardiospermum helicacabum; Carthamus tinctorius; Cassia fistula, angustifolia, occidentalis, sophora and tora; Citrullus colocynthis; Cleome felina; Clitoria ternatea; Croton oblongifolium and tiglium; Desmodium triflorum; Emblica officinalis; Euphorbia nerifolia; Fel Bovis; Ficus carica; Garcinia indica, purpuria and xanthochymus; Gmelina arborea; Grewia asiatica; Hemidesmus indicus; Helleborus niger; Hordeum hexactachon; Indigofera tinctoria; Ipomoea batatas, caerulea, cymosa, digitata, hederaceae, poscaprae, remiformis and turpethum; Jatropha montana and curcas; Lagenaria vulgaris; Luffa acutangula, aegyptica, amara and echinata; Lycopersicum esculentum; Mallotus philippinensis; Mangifera indica; Melia azedarach; Pavetta indica; Plumbago zeylanica; Plumeria

acutifolia; Podophyllum emodi; Premna serratifolia; Prunus amygdalus, institia and domestica; Rheum emodi; Ricinis communis; Rosa damascena; Saccharum spontaneum; Salvadora persica; Sida cordifolia; Solanum xanthocarpum and indicum; Sterospermum suaveolens; Sulphur; Tamarindus indica; Terminalia species; Trianthema monogyna; Trichosanthes cucumerina, cuspida, dioica, laciniosa and palmata; Uraria lagopoides; Vitis vinifera; Zizyphus jujuba, laccifera and napeca.

Pustulants.—Aegle marmelos; Andropogan species; Bassia latifolia; Boswellia serrata; Buchanania latifolia; Butea frondosa; Calotropis giganta; Cedrela toona; Cinnamomum tamala; Cissempelos hexandra and hernandifolia; Croton tiglium; Ficus Bengalensis, glomerata and religiosa; Gloriosa superba; Glycerrhiza glabra; Mangifera indica; Mimosa pudica and sylvatica; Mimusops elengi; Nauclea cadamba; Nelumbium speciosum; Nerium odorum and oleander; Picrorrhiza kurroa; Plumbago zeylanica; Pongamia glabra; Ricinis communis; Rubia cordifolia; Semicarpus anacardium; Spondias mangifera; Symplocos racemosa; Terminalia arjuna; Woodfordia floribunda; Zizyphus jujuba.

Refrigerants.—Acorus calamus; Citrullus vulgaris; Cocculus cordifolius; Coriandrum sativum; Cyperus rotundus and pertenuis; Embelia ribes; Glycerrhiza glabra; Nelumbium speciosum; Nymphaea stellata, rubra, alba odorata and cyanea; Oldenlandia herbacea; Pavonia odorata; Piper longum; Plumbago zeylanica; Potassium nitras; Pterocarpus santalinus; Tamarindus indica; Trichosanthes dioica; Vitis vinifera; Zingiber officinale.

Rubefacients & Irritants.—Andropogon muricatus; Argemone mexicana; Calophyllum inophyllum; Cleome viscosa; Ferula asafoetida; Glycyrrhiza glabra; Moringa pterygosperma; Nymphae lotus; Pimpinella anisum; Piper longum and nigrum; Plumbago zeylanica; Plumeria acuminata; Psoralea corylifolia; Pterocarpus santalinus; Rubia cordifolia; Rumex vesicarius; Semecarpus anacardium; Sinapis juncea; Zingiber officinale.

Sedatives (*Cerebral & local*):—Achyranthes aspera; Amomum subulatum; Berberis aristata; Cardiospermum helicacabum; Clitoria ternatia and marina; Curcuma longa; Embelia ribes; Moringa pterygosperma; Nigella sativa; Ocimum basilicum, sanctum, gratissimum and villosum; Piper longum, nigrum and aurantiacum; Salvadora persica; Sinapis alba and nigra; Sodium chloride and S. impura; Xanthoxylon alatum; Zingiber officinale. (*Pulmonary*):—Costus speciosus; Curcuma zerumbet; Emblica officinalis; Phyllanthus niruri; Rhus succedania; Solanum xanthocarpum and indicum; Terminalia chebula; Zizyphus jujuba. (*Vascular*):—Aconitum ferox (also *cardiac* and *cerebro-spinal*); Andropogon muricatus; Brassia latifolia; Cocculus cordifolia; Eucalyptus globulus (*cerebro-spinal*); Glycerrhiza glabra; Gmelina arborea; Hemidesmus indicus; Ichnocarpus frutescens; Lactuca scariola (*cerebro-spinal*); Nicotina tabacum (also *cardiac*); Nymphaea stellata: Pavonia odorata; Potassium nitras (also *cerebro-spinal*); Prunus padus; Pterocarpus santalinus; Santalum album.

Sialagogues.—Anacyclus pyrethrum; Erythroxylon coca; Hydrargyrum; Jatropha curcas; Menespermum fenestratum and hirsutam; Myrica sapida; Nicotina

tabacum; Piper species; Sinapis juncea; Zingiber officinalis.

Soporifics.—See "Hypnotics".

Sternutatories.—See "Errhines".

Stimulants.—(*Respiratory*):—Andropogon species; Costus speciosum; Curcuma zerumbet; Elettaria cardamomum; Ferula asafoetida; Ocimum sanctum; Phyllanthus niruri; Rumex vesicarius. (*Spinal*):—Buchanania latifolia; Ficus glomerata; Grewia asiatica; Hordium hexactichon; a variety of Oryza sativa; Phoenix sylvestris; Punica granatum; Saccharum officinarum; Zizyphus jujuba. (*Vascular*):—Acorus calamus; Aquilaria agallocha; Capsicum annum; Cassia auriculata; Cinnamomum camphora; Ferula asafoetida (also *cerebro-spinal*); Myristica malabarica; Piper longum; Premna serratifolia; Ptychotis ajowan; Solanum xanthocarpum; Tabernamontana coronaria; Thea Assamica; Zingiber officinale. (*Cerebro-spinal*):—Allium sativum; Cannabis indica; Castoreum; Erythroxylon coca; Moschus moschiferus; Nardostachys jatamansi; Papaver somniferum; Saussurea auriculata; Strychnos nux-vomica.

Stomachics.—Aconitum heterophyllum, Acorus calamus; Aegle marmelos; Alstonia scholaris; Andrographis paniculata; Anthemis nobilis; Asparagus adscendens; Berberis aristata; Boerrhavia diffusa; Capparis trifolia; Cassia fistula; Cedrus deodara; Cinchona cortex; Cissampelos hexandra; Cocculus cordifolius; Coptis teeta; Cuminum cyminum; Curcuma longa; Cyperus rotundus; Elettaria cardamomum; Embelia ribes; Emblica officinalis; Erythroxylon coca; Ferula asafoetida;

Ficus glomerata; Flacourtia cataphracta; Gentiana kurroa; Glycerrhiza glabra; Gmelina arborea; Hibiscus abelmoschus, populnea & rosa sinensis; Holarrhena antidysenterica; Hydrocotyle asiatica; Hyssopus officinalis; Melia azedarach; Mesua ferrea; Momordica myxa & dioica; Picrorrhiza kurroa; Pimpinella anisum; Piper longum, betel, nigrum & aurantiacum; Plumbago zeylanica; Premna herbacea & serratifolia; Pyrus malus; Quassia excelsa; Rheum emodi; Scindapsus officinalis: Sida cordifolia; Siegesbeckia orientalis; Sinapis alba; Stercospermum suaveolens; Strychnos nux-vomica & potatorum; Swertia chirata; Terminalia chebula; Uraria lagopides; Zingiber officinalis & zerumbet.

Styptics.—See "Haemostatics".

Sudorifics.—See "Diaphoretics".

Tonics.—Ambra grisea; Aquilaria agallocha; Arsenious acid (*nervine*): Asphaltum (*nervine*): Aurum, calcined; Bassia latifolia, longifolia and butyracea; Beninkasa cerifera; Brassica campestris (*nervine*); Calotropis giganta; Canscora decussata (*nervine*); Cocculus cordifolia; Convolvulus paniculatus; Cordia latifolia and myxa; Desmodium triflorum; Erythroxylon coca; Gymnema balsamicum and lactiferum; Gynocardia odorata; Hemidesmus indicus; Herpestis moniera (*nervine*); Ipomoea digitata and batatas; Mimusops elengi: Nardostachys jatamansi (*nervine*); Nerium odorum; Onosma species; Phaseolus trilobus; Sesamum indicum; Sida rhombifolia; Smilax chinensis; Strychnos nux-vomica (*nervine*); Tribulus terrestris; *Triphala*; Uraria lagopoides; Vanda Roxburghii; Withania somnifera. (*Cardiac*).—Artocarpus lakoocha; Carissa Corundas; Citrus medica; Mangifera indica; Prunus

species; Punica granatum; Rumex vesicarius; Spondias mangifera; Tamarindus indica.

Vermifuges.—See "Anthelmintics".

Vesicants.—Moringa pterygosperma.

Vulneraries.—Bombax malabaricum; Cocculus cordifolia; Glycerrhiza glabra; Grislea tomentosa; Mimosa pudica; Myrica sapida; Stephania hernandifolia; Symplocos racemosa; Uraria lagopoides.

APPENDIX II

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Drugs and their Specific Uses in Diseases.

Abelmoschus esculentus in diseases of the intestinal and genito-urinary organs. *Abrus precatorius* in nervous debility and locally, leucoderma, alopecia, sciatica, stiff joints and paralysis. *Abutilon indicum* in diseases of the bladder and urethra. *Acacia arabica* in pulmonary and bronchial diseases, diarrhoea, irritability of the genito-urinary organs. *Acacia catechu* in ulcerations internally and externally. *Acacia senegal* in bleeding piles and other haemorrhages. *Acipenser huso etc.* (Fishes) in chronic diarrhoea and debility. *Aconitum Ferox* in fever, cough, asthma, diabetes, nervous diseases and locally in neuralgia, rheumatism and guinea worms. *Aconitum heterophyllum* in dyspepsia and chronic fever. *Acorus calamus* in gastric and respiratory diseases, hysteria and spasmodic complaints. *Adansonia digitata* in dysentery, diarrhoea, dyspepsia, acid eructations and externally painful joints and syphilitic ulcers. *Adsps* (Lard) in excoriations, burns and scalds. *Adhatoda vasica* in respiratory. spasmodic diseases and fever. *Aegle marmelos* in chronic diarrhoea and dysentery. *Agave marmelos* in gonorrhoea and syphilis. *Allium cepa* in bronchial complaints, infantile, epileptic and hysterical fits. *Allium sativum* in infantile convulsions and nervous affections. *Aloe barbadensis* in eye affections and internally in piles, coughs and cold. *Aloe litoralis* in internal and external inflammations, bleeding piles and dysentery. *Alstonia scholaris* in catarrhal fevers and chronic bowel complaints. *Alumen and its preparations* in passive haemorrhages,

chronic diarrhoea and dysentery, diarrhoeas of phthisis and cholera, gastro-intestinal, renal, uterine and genito-urinary catarrh and haemorrhages, bleeding piles, strangury, vomiting, hiccup, asthma, croup and whooping cough, narcotic poisoning, serpent bite, malaria, concussion of the brain and spinal cord fractures, lead colic, guinea-worm, enteric fever, diabetes, albuminuria and externally bleeding from nose, gums, vagina, rectum, cuts etc., ulcers, bed-sores, fissures, sore-eyes, recent ecchymoses, aphthæ, thrush, eczema, sweating feet etc., prolapsus of the anus, urethral discharge, scorpion bites etc. *Ambra grisea* in general and nervous debility, epilepsy, spasms, high fevers with delirium and collapse. *Ammonium chloride* in hepatic congestion and dropsy, jaundice, biliousness, laryngeal, bronchial, pulmonary, vesical, gastro-intestinal and genito-urinary catarrhs and inflammations, intermittent fevers, neuralgias and externally headache, mania and apoplexy, inflamed erysipelas and hernial tumours, enlarged glands, abscesses, milk abscesses, chronic skin diseases, bruises and blows on the eye etc., cataract, scorpion bites etc. *Amorphophyllus sylvaticus* in piles, dyspepsia, debility, amenorrhoea, and locally boils and ophthalmia. *Anacyclus pyrethrum* in nerve affections, chronic bowel complaints and seminal debility. *Ananas sativus* in gastric irritability and biliousness. *Andrographis paniculata* in general debility, convalescence and dyspeptic conditions. *Andropogon citratis* in colds, catarrhs and fevers, flatulent and spasmodic affections of the gastro-intestinal tract and externally in rheumatism and neuralgia. *Animal flesh preparations* in convalescence, hysteria, paralysis,

insanity, cephalalgia, and other nervous diseases, cough, phthisis, eye and ear diseases and externally convulsions, paralysis and wasting of limbs. *Anisomeles Malabarica* in catarrh, intermittent fevers and gastro-intestinal affections. *Areca catechu* in worms, watery discharges from genito-urinary organs and bleeding gums. *Argyreia speciosa* in dullness of intellect, emaciation, infirmity of old age and externally abscesses. *Aristolochia bracteata* in maggots in the nose, syphilis, gonorrhoea and skin diseases. *Aristolochia indica* in venomous insect bites, and internally in intermittent fevers and bowel complaints. *Artemesia species* in dyspepsia, hysteria, epilepsy, nervous irritability, depression and exhaustion, worms and externally skin diseases, foul ulcers and as snuff in headache. *Arsenic* (*Bisulphuret of*) in fevers, coughs, asthma and skin diseases and locally fistulous sores and other skin diseases, cephalalgia, oezena and coma. *Arsenic* (*Trisulphuret of*) in chronic fevers, skin-diseases, incipient phthisis, coughs, asthma, paralysis, epilepsy, dropsy and externally warts, corns, leprous ulcers and as a depilatory. *Arsenious Acid* in chronic fevers, liver complaints, lienteric diarrhoea, neuralgias, chorea, enlarged lymphatic glands, obesity, chronic coryza, and externally cancer, lupus, parasitic diseases, asthma, cough and impotence. *Asparagus Species* in general debility, calculus affections, gastro-intestinal disorders, colic etc. *Asphaltum* in genito-urinary diseases, gallstone, renal stone, anuria, jaundice, enlarged spleen and liver, fermentative dyspepsia, round worms, piles, anasarca, obesity, nervous diseases, uterine troubles, scrofula, tuberculosis, leprosy, eczema, elephantiasis, anaemia, anorexia, asthma of gouty

people, phosphaturia (contra-indicated in uric acid calculus), ascites, uraemia, cholaemia, chyluria, albuminuria, chronic cystitis, diabetic amaurosis and locally rheumatic arthritis, paralysis, contusions, sprains and bruises. *Aurum (prepared)* in chronic fevers, consumption, insanity and other diseases of the nervous system, and of the urinary organs, hysteria, epilepsy, leprosy, asthma, dyspepsia, amenorrhoea, sterility, habitual abortion, chronic Bright's disease, chronic metritis, syphilis, scrofula & impotence.

Balsamodendron mukul in rheumatic, nervous, scrofulous, urinary and skin diseases. *Balsamodendron myrrh* in dyspepsia, chest complaints, amenorrhoea and other atonic, uterine affections and externally in guinea-worm, inflammations and ulcers. *Balsamodendron opobalsamum* in genito-urinary diseases and locally indolent ulcers, cuts and bleeding wounds. *Bambusa arundinaceae* in thread worms and internally bronchial, spasmodic affections. *Barringtonia acutangula etc.*, in colds, catarrhs, headaches and ophthalmia. *Basella species* in catarrhs of the bronchial and genito-urinary tracts and externally in headaches and insomnia. *Bassia latifolia* in skin diseases, cephalalgia and internally rheumatic affections and general debility. *Bauhinia variegata* in worms, piles, diarrhoea, dysentery, dyspepsia flatulence, coughs, scrofulous affections and skin diseases. *Beninkasa cerifera* in internal haemorrhages, nervous and spasmodic diseases, vegetable poisons, dyspepsia and biliousness. *Berberis aristata* in fevers with biliousness, liver and spleen diseases and locally leucorrhoea and eye affections. *Bixa orellana* in dysentery, gonorrhoea &

fevers. *Boerhavia diffusa* in inflammatory and dropsical affections, hepatic disorders, rheumatic and gouty complaints. *Bombax Malabarica* in diarrhoea, dysentery, menorrhagia, gonorrhoea, calculi, renal and bladder inflammation and ulceratious. *Bombyx mori* in profuse menstrual flow, leucorrhoeas, chronic diarrhoea, eye deseases and catarrh. *Boswellia glabra etc.*, in rheumatic, scrofulous and syphilitic affectious, urinary, uterine and pulmonary diseases. *Brassica alba* for hip-baths in fevers, cerebral congestions and internally in nervous complaints. *Brassica juncea* in rheumatic and chest affections. *Brassica nigra* in gouty, rheumatic, inflammatory and febrile cases. *Bryonia epigoea* in diabetes, rheumatic and syphilitic complaints. *Butea frondosa* in diarrhoea, dysentery and round worms and externally in skin diseases, swellings and ulcerations.

Caesalpinia bonduc in fevers, gastric and hepatic disorders, and externally in inflammations. *Calcium and its salts* in enlarged spleen, jaundice, urinary troubles, acid dyspepsia, heartburn, infantile diarrhoeas, scrofula, consumption, menorrhagia and externally fractures and painful swollen parts, headaches, gouty joints, bites of rabid dogs, ringworm, Dhobie's itch etc., warts, small-pox, burns and scalds, sore and cracked nipples, chancres, scrofulous and other ulcers, leucorrhoea and other vaginal discharges, pruritus ani and pudendi, erysipelas and other skin affections and as a depilatory. *Calcium oxide* or *Calx* in gastric acidity. *Calophyllum inophyllum* in genito-urinary diseases. *Calotropis gigenta* in constitutional and syphilitic affections, visceral enlargements and skin diseases. *Camphora officinarum* in eruptive and

other fevers, spasmodic, chest, respiratory, and cerebral affections. *Cannabis sativa* in all diseases requiring a stimulant, exhilarant, aphrodisiac and anodyne action. *Capsicum frutescens* in pharyngeal and gastro-intestinal diseases. *Cardiospermum helicacabum* in urinary and nervous diseases, rheumatism, piles amenorrhoea and locally earache, rheumatism and amenorrhoea. *Caryota urens* in seminal weakness and urinary disorders and externally in hemicrania. *Carica papaya* in croup, diphtheria, dyspepsia, enlarged spleen and liver, chronic diarrhoea and worms and externally elephantoid growths. *Cassia alata etc.* in poisonous insect bites and skin affections. *Cassia fistula* in ague, fever, gastric complaints as constipation, flatulent colic etc., and externally rheumatic and skin affections. *Cassia occidentalis* in dyspeptic symptoms and externally in skin diseases and poisonous bites. *Cassia sophora* in bronchial, spasmodic affections rheumatic and inflammatory fevers and externally in skin dis[illegible] obstinate skin diseases as [illegible]rs etc. *Castoreum* in nervous debility, hysteria, epilepsy, asthma, muscular tremor, uterine colic and [illegible]ders. *Cedrus deodara* in bilious fevers and and atonic inveterate diarrhoea. *Cera alba etc.* in ulcers fistula in ano etc. *Cervus dama etc.*, and preparations, in painful affections of the joints and muscles, cardialgia, pleurisy, pleurodynia znd other heart affections, cough asthma, low fevers, seminal debility, dysentery and locally sprains, contusions, cracks and fissures, chronic skin diseases, orchitis and other enlarged giands. *Cetaceum* in alvine and urinary irritations and locally blistered and excoriated surfaces and ulcers. *Chenopodium ambrosioides*

in ascaris and ankylostomum. *Cichorium intybus* in liver and spleen disorders. *Cinchona cortex* in intermittent fevers, spleen enlargement and as general gastric tonic during convalescence etc. *Cinnamomum cassia etc.*, as gastro-intestinal and uterine stimulant and locally in rheumatic pains, headache and toothache. *Cinnamomum iners etc*, in fevers, flatulence, dyspepsia and coughs. *Cinnamomum Malabaricum* in diarrhoea, dysentery and coughs. *Cissempelos Pereira* in dyspepsia, diarrhoea, mucous discharges from the intestines and bladder, nephrites and externally snake-bites, scorpion stings. *Citrullus colocynthis* in hepatic, abdominal, visceral and cerebral congestions, neuralgic affections, constipation, fever and worms. *Citrus aurantium* in bilious and gastric disorders, scurvy, rickets, eczema etc., and externally in gout and rheumatism. *Citrus bergamia* in scorbutic affections, internal haemorrhages, rheumatic, dyspeptic and diabetic complaints and externally in cutaneous irritations. *Citrus medica* in bilious fevers, dyspepsia and inflammatory affections. *Cleome viscosa* in worms, foul ulcers, maggots in the nose, otorrhoea and internally in infantile convulsions. *Clerodendron* species in [illegible], scrofulous and venereal diseases, worms, bronchial and pulmonary affections. *Clitoria ternatia* in croup, visceral enlargements, cystic and urethral irritations. *Cocculus cordifolius* in fevers, gastric disorders, general and seminal debility, liver and splenic enlargements, urinary diseases, rheumatic and syphilitic affections. *Cocculus suberosus etc.*, in epileptic and paralytic affections, night-sweats of phthisis and externally in parasitic skin diseases. *Cocculus villosus* in gonorrhoea, rheumatic and syphilitic

cachexia, bilious dyspepsia and skin diseases. *Coccus cacti* in whooping cough, neuralgia etc. *Coccus lacca preparations* in chronic fever, remittent fever, consumption, cough and dyspnoea, muscular rheumatism, epilepsy, hysteria, indolent, scrofulous and scorbutic ulcers. *Coffea Arabica* in spasmodic and hysterical affections, chronic diarrhoea and cholera infantum. *Corallium rubrum & its preparations* in broncho-pulmonary affections, low fever, genito-urinary diseases, scrofulous, affections, carbuncle, nervous troubles, dyspepsia and biliousness, diabetes, impotence and general debility. *Corchorus capsularis etc.*, in gastric catarrh, hepatic and intestinal colic, worms, genito-urinary diseases, visceral obstructions. *Coriandrum sativum* in flatulent . colic, dyspepsia, bleeding piles, rheumatism, neuralgia, cephalalgia and locally in eye affections. *Crataeva nurvala* in calculus. syphilis, renal & urinary complaints, scrofulous, glandular and internal inflammations and locally ozoena and flatulence. *Crocus sativus* in spasmodic coughs and catarrhs, gastro-intestinal and uterine disorders, seminal debility, neuralgias, rheumatism and locally bruises and sores. *Croton tiglium* in dropsy, lead poisoning, cerebral congestion, apoplexy, intestional obstructions, and externally gout, arthritis, lock-jaw, mania, chronic laryngitis and bronchitis. *Cubeba officinalis* in laryngeal, bronchial, genito-urinary and renal diseases. *Cucumis species* in inflammatory fevers, urinary irritation and suppression and calculus affections. *Cuprum & its salts* in chronic diarrhoea and bacterial infections, sprue, typhoid fever, Tabes mesenterica, bronchitis, asthma and externally foul ulcers, sinuses, fistulae, ringworm, conjunctivitis

and ophthalmia, epistaxis, excessive and obstinate haemorrhages, leucorrhoea, burns from phosphorus and prickly heat. *Cuminum cyminum* in chronic diarrhoea, dyspepsia, gonorrhoea and urinary complaints. *Cupri sulphas* locally in pseudo-membranous croup. *Curculigo orchioides* in gonorrhoea, leucorrhoea, menstrual derangements, asthma, jaundice, diarrhoea, colic, seminal weakness and debility of old age. *Curcuma amada* in skin diseases. *Curcuma angustifolia* in gastro-intestinal inflammation and ulceration and urethral irritation. *Curcuma aromatica* in sprains, bruises and skin diseases. *Curcuma longa* in wounds, bruises, insect bites, sore eyes and skin diseases and internally gastric disorders. *Curcuma zedoaria* in flatulence, dyspepsia, pharyngeal and laryngeal inflammations and discharges from genital organs and locally skin affections. *Cynodon dactylon* in vesical calculi, urinary irritation, dropsies and internal haemorrhages. *Cyperus species* in remittent and chronic fevers, gastric derangements, worms and locally scorpion stings and ulcers. *Cypraea moneta* in dyspepsia, jaundice, enlarged spleen and liver, asthma and cough, scalding in gonorrhoea, colic and other intestinal pains.

Datura alba etc., in spasmodic lung complaints, maniacal affections, and locally painful and glandular inflammations. *Diosypros species* in internal inflammations and haemorrhages and externally boils and tumours. *Dipterocarpus turbinatus* in bronchial and genito-urinary diseases, leprosy, and other skin diseases. *Dolichos species* in diarrhoea, leucorrhoea, haemorrhages from internal organs, coughs, and calculus affections.

Echinops echinatus in impotence, dyspepsia, hysteria,

syphilis and scrofula. *Eclipta erecta* in hepatic disorders, splenic enlargements, cephalalgia, elophantiasis, poisonous wounds, and internally uterine haemorrhages. *Elephas indicas etc.*, in jaundice and sterility in women and externally leucorrhoea and conjunctivitis. *Elettaria cardamomum* in stomach complaints, biliousness and vomiting. *Embelia ribes etc.*, in intestinal worms, gastric disorders, piles and locally toothache, headache, indolent ulcers and other skin diseases and in lung inflammation. *Emblica officinalis* in worms, inflammations of the lungs and eyes, ulcerations, gastro-intestinal disorders and discharges and internal haemorrhages. *Eriodendron anefactuosum* in gonorrhoea, dysentery, haemorrhoids, menorrhagia, impotence and diabetes. *Erythrina indica* in intestinal worms, dysentery, dysmenorrhoea, strangury, syphilis and locally in ophthalmia, toothache, rheumatism etc. *Erythroxylon coca* in general debility, catarrh, cold, asthma etc., and as local anaesthetic. *Eucalyptus globulus* in respiratory affections, diphtheria, fevers, purulent catarrhal affections of the bladder, urethra and vagina, chronic bowel complaints and locally wounds, foetid ulcers, chronic skin diseases and spongy bleeding gums. *Eugenia jambolana* in diabetes, chronic diarrhoea and dysentery. *Eupatorium ayapana* in ague, gastro-intestinal derangement, and locally to ulcers and venomous bites. *Euphorbia species* in dropsy, palsy, syphilis, leprosy, enlarged liver and spleen, spasmodic respiratory complaints and externally to neuralgias, glandular swellings, painful joints, whitlows, warts, scrofulous and other inveterate ulcers, venomous bites and syphilitic nodes.

Fagonia Arabia etc., in soremouth, stomatitis,

intense scratching and skin irritability. *Fel Bovis Purificatum* in measles, small-pox, heat in the body, whooping cough, diarrhoea and other intestinal disorders, hysteria, convulsions, spasmodic diseases, jaundice, deficient secretion of bile, abortion and externally skin diseases. *Ferrum and its salts* in diabetes, anaemia, chlorosis, dropsy, haemorrhagic diseases, leucorrhoea, chronic dyspepsia, scrofula, tuberculosis, intestinal worms and blood parasites, erysipelas, carbuncles, furunculosis, enlarged spleen and liver, diabetes and other urinary diseases, ascites, anasarca, uterine troubles, chronic bowel complaints, general debility, sexual debility, neuralgia, rheumatism and externally foul syphilitic ulcers and various skin diseases, fistulae, bleeding piles, ozoena, rectal prolapsus and eye diseases, alopecia and grey-hairs. *Feronia elephantum* in diarrhoea, dysentery, biliousness, dyspepsia, scurvy and affections of the gums and throat. *Ferula asafoetida etc.*, in dyspepsia, flatulence, colic, convulsions of weakly children, hysteria, spasmodic and obstinate coughs, worms, liver torpidity, uterine affections, habitual abortion, nervous, paralytic and rheumatic complaints. *Ficus Benghalensis etc.*, in diabetes, haemoptysis, gonorrhoea, spermatorrhoea, dysentery, diarrhoea and locally toothache, bruises, cracks and rheumatic pains. *Ficus carica* in renal and vesical calculi, visceral obstructions, piles, gout and externally ulcers, gumboils, cracks in the mouth etc. *Ficus glomerata* in dysentery, menorrhagia, diabetes, bilious affections and locally aphthae, ulcers; even leprous, scrofulous and cancerous. *Ficus religiosa*, in gonorrhoea, leucorrhoea, skin diseases, cracked feet anal fistula, aphthous sores and internally dysentery and as

nutritious, cooling drink in heat of body. *Foeniculam vulgare* in flatulence, colic, dysentery of children, indigestions, painful micturition, suppression of menses and general heat of the body.

Gallus bankiva var domesticus in invalid and anaemic condition, convalescence, emaciation, dyspepsia general debility and locally buboes, boils, cancer etc. *Garcinia mangostana* in chronic diarrhoea and dysentery, leucorrhoea, gonorrhoea, gleet and locally tonsillitis, prolapsus ani and vaginae. *Garcinia pictoria etc.*, in hepatic obstructions, gouty arthritis, apoplexy and cerebral congestion and locally sprains, bruises and swollen hands and, feet. *Garcinia purpurea* in dysentery, mucous diarrhoea, pulmonary phthisis and scorbutic diseases and locally burns and scalds, fissures and ulcerations. *Gardenia gummifera* in toothache, foul sores and maggots in the nose. *Gasteropoda its preparations*, in dysentery, gonorrhoea, colic, dyspepsia, jaundice, tympanites, flatulence catarrh, cough, asthma, discharges from ears, nose etc. *Gendarussa vulgaris* in fevers, coughs and colic of children, chronic indigestion and dysentery, and locally glandular swellings and rheumatic joints. *Gentiana kurroa* in fevers, dyspepsia, gout, torpid liver, spleen enlargement, anaemia and worms. *Glycyrrhiza glabra* in sore throats, catarrhs, coughs, bronchial affections, bilious fevers, leucorrhoea and other uterine complaints. *Gmelina arborea* in fevers, waterbrash, anasarca and locally headache. *Gossypium indicum* in dysentery, piles, strangury and gravel, uterine disorders, and as antidote to datura poisoning and externally to sores and wounds, boils and gouty joints. *Gymnema sylvestre* in snake

bites, swollen glands and visceral enlargements and internally in cough and fever. *Gynandropsis pentaphylla* in sprains, round worms, convulsive affections and locally otitis, otalgia, boils and other external inflammations. *Gynocardia odorata* in leprosy, scrofula and other skin diseases, chronic rheumatism, gout and secondary syphilis.

Helicteres isora in intestinal pains, diabetes, diarrhoea and dysentery and locally in otorrhoea. *Helleborous niger* in chronic fever, apoplexy, dropsy, mania, melancholia and worms. *Hemidesmus indicus* in chronic cough, syphilitic cachexia, gravel, strangury, dyspeptic disorders, genito-urinary diseases, chronic rheumatism and impurity of the blood. *Hermodactylus gol* in intermittent fever, bronchial catarrh and congestion, hysteria, dysentery, chronic gout, torpid liver, dropsy and enlarged spleen. *Herpestis monniera* in insanity, hysteria, epilepsy and bilious disorders, anurea and obstinate costiveness. *Hibiscus species* in fevers, gonorrhoea, urethritis, catarrhs of the bladder and air passages, seminal weakness and externally bruises, sprains, insect bites, inflamed joints and skin diseases. *Hirudo medicinalis* in acute inflammation of the glands and of the serous membranes and of the skin or bones (but *not* in the affections of the scrotum or eye-lids), obstinate vomiting, violent headache, severe pains in the chest or abdomen, menstrual deficiency, acute dysentery, congestion of the liver. *Holarrhena antidysenterica* in dysentery and diarrhoea, piles, intestinal worms, chronic chest affections, dyspepsia and externally rheumatism and toothache. *Hordeum vulgare* etc , as a diluent drink in fevers, nutritious food

for infants and a demulcent in the irritation of bladder, kidney, urethra etc. *Hydnocarpus species* in leprosy, abscesses, sore-eyes and wounds, scrofulous nodes, skin diseases, syphilitic or otherwise, gonorrhoea, vaginal foetid discharges, internally as well as externally. *Hydrargyrum and its preparations* in fevers, diarrhoea, dysentery, anasarca, dyspepsia, hyperacidity, chronic gastritis, worms, jaundice, dropsy, liver diseases, bronchial affections, nervous diseases, diseases of the female and urinary organs, mental and physical debility, uric acid diathesis, gravel, syphilis, gonorrhoea, paralytic troubles, rheumatism and externally syphilitic eruptions, skin diseases, inflammation of lymphatic glands, buboes etc., tonsillitis, boils and ophthalmia. *Hydrocotyle Asiatica* in leprous, scrofulous, syphilitic and other skin affections, chronic rheumatism, elephantiasis, dysenteric and other bowel complaints, various sorts of fevers, insanity and hypochondriasis. *Hygrophila spinosa etc.*, in rheumatism, gravel, gonorrhoea, leucorrhoea and other genito-urinary diseases, hepatic obstructions, impotence and diarrhoea. *Hyoscyamus niger etc.*, in mental and nervous irritabilities, spasmodic and irritable affections of the lungs, bowels and genito-urinary organs, gouty and other inflammatory swellings.

Ichnocarpus frutescens in chronic skin diseases, syphilis, elephantiasis and loss of sensation. *Indigofera species* in elephantiasis, leprosy, cancer, secondary syphilis, calculus affections, nervous affections, enlarged liver and spleen, kidney complaints and locally in aphthae, various skin affections, haemorrhoids, wounds, ulcers, venomous bites, burns and scalds. *Ipomoea species* to promote the growth of the foetus in utero, and in spleen and liver enlargements,

gout, rheumatism, gonorrhoea and dropsies, emaciation and general debility, neuralgia, headache, melancholia, cutaneous diseases, paralysis and locally ulcers, rat, scorpion and snake-bites. *Iris pseudocorus* in scanty urine and anuria. *Ixora coccinea etc.*, in diarrhoea, dysentery, gonorrhoea, leucorrhoea and locally ulcers, boils, headaches and sorethroats.

Jasminum species in insanity, hysteria, amenorrhoea, bronchial obstruction and externally obstinate skin diseases, headaches, ear and nose diseases, aphthous ulcers, mammary abscesses and eye complaints. *Jatropha species*, in enlargement of spleen and liver, glandular swellings, constipation and flatulence and externally boils and abscesses, haemorrhages, spongy gums, obstinate skin diseases, rheumatic joints, sinuses and paralysis. *Juniper communis* in scanty urine, chronic Bright's disease. hepatic dropsy, pectoral affections, chronic gonorrhoea and leucorrhoea and locally rheumatic swellings and certain skin affections.

Kaolinum in cholera, dysentery, diarrhoea and locally diphtheria, burns, vaginal and uterine discharges, neurosis of the heart, hysteria, gonorrhoeal epididymitis and dandruff. *Kariyat* in dyspepsia, general debility, convalescence after fevers. *Kumyss* in diabetes, irritability of the stomach and obstinate vomiting.

Lacerta agilis preparation in general debility and impotence. *Lactus and its preparations* in gastric catarrh, ulcers and cancer, gastrorrhagia, dyspnoea, hectic cough, chronic diarrhoea and other intestinal disorders, flatulence, piles, worms, albuminuria and urinary complaints, anorexia, ascites and anasarca, splenitis, stomatitis, acid

stomach, heart-burn, appendicitis, jaundice, insomnia, poisoning by corrosive sublimate, copper sulphate and corrosive acids, enteric and other low fevers, eye-diseases and externally syphiiis, acute iritis, hereditary eczema, colic, sores, burns, blistered surfaces, wasting diseases, irritability of the skin, coryza, nervous diseases, rheumatic affections and joints, eye-affections, burning of the body, hands or feet and chest pains. *Lawsonia alba etc.*, in jaundice, hepatitis, splenitis, calculus affections, menorrhagia, vaginal discharges, lepra and other depraved conditions of the body and locally bruises, sprains, inflammations, burns, gonorrhoea and leucorrhoea. *Lens esculanta* in debility, mal-nutrition and externally small-pox and other foul ulcers. *Lepidium sativum* in constitutional diseases like scrofula, syphilis, rheumatism, diarrhoea, dysentery and skin diseases, chronic enlargement of the spleen etc, seminal debility, leucorrhoea, scurvy and externally in skin diseases, sprains, bruises, dislocation and rheumatic pains. *Linum usitatissimum* in bronchial affections, irritation of the genital and urinary organs, spasmodic affections of the bowels, piles and externally in ulcerated and inflamed surfaces, deep-seated inflammations, burns and scalds. *Luffa species* in ascites, enlarged spleen, infantile cirrhosis of the liver, piles, jaundice, worms, colic, dysentery, dropsy and externally in headache, jaundice, carbuncles and other foul ulcers, splenitis, haemorrhoids and leprosy.

Mangifera indica etc., in throat diseases, diarrhoea, chronic dysentery, bleeding piles, round worms, menorrhagia, acute gonorrhoea, scurvy, haematemesis, aphonia, diabetes and externally in parasitic skin diseases, bruises,

and cracks in the feet etc. *Mel and its preparations* in bronchial affections, chronic colds, pneumonia, heart-weakness, rickets, marasmus, scurvy, infirmity of old age, diabetes and locally aphthae, thrush, sore nipples, head-ache, colic, bruises, sprains, burns, scalds and ulcers. *Melanleuca leucadendron* in flatulence, colic, diarrhoea, hysteria, hiccup, dyspnoea, dysmenorrhoea, neuralgia, rheumatism, and low fevers and externally rheumatic, muscular and neuralgic pains, earaches and skin affections. *Melia azadirachta* in intermittent fevers, convalescence, atonic dyspepsia, rheumatic complaints, leprosy and syphilis, intestinal worms, piles, urinary diseases, uterine flux, jaundice, catarrhal affections, and chronic skin diseases, and externally in cases of small-pox, unhealthy ulcerations, parasitic skin affections, scrofulous and other indolent and glandular swellings, bruises, sprains and to prevent the ravages of white ants. *Melia azedarach* in leprosy, scrofula, intestinal worms, splenic enlargement, and locally nervous headaches and eruptive skin diseases. *Mentha piperata etc.*, in colic and other gastric disturbances, dysmenorrhoea, hiccup, palpitation of the heart, and locally diphtheria, toothache, neuralgic and and rheumatic pains. *Mesua ferrea etc*, in bleeding piles, dyspepsia, dysentery and locally severe colds and skin affections. *Mica and its preparations* in anaemia, chlorosis, jaundice, biliousness, chronic diarrhoea, dyspepsia, dysentery, nervous debility, impotence, chronic fever, hectic fever, phthisis, enlarged spleen, urinary diseases, anasarca, scurvy cachectic condition, asthma, intestinal worms, chronic bronchitis, colic, gonorrhoea, spermatorrhoea, rheumatism, piles, heart-diseases,

paralysis, leprosy, diabetes and eye-diseases. *Michelia champaca etc.*, in flatulence, dyspepsia, chronic gastritis, colic, gonorrhoea and renal diseases and locally abscesses, gout, rheumatism, cephalalgia and foetid discharges from the nostrils. *Mimosa spec ies* in calculus complaints, piles and fistula, diseases arising from corrupt blood and bile and externally fistulous sores, hydrocele and glandular swellings,eye-inflammations, white leprosy, skin eruptions, boils, and burns. *Mimusops elengi, hexandra etc.* to increase fertility in women and in fevers, as nutritive tonic, and externally, wounds and ulcers, headache, obstinate constipation, loose teeth, spongy gums, salivation, mucous discharges frcm the nose, bladder and urethra. *Momordica species* in bilious affections, piles, jaundice, leprosy, dysmenorrhoea and externally intractable ulcers aud other skin affections; burning in the feet, night blindness, liver complaints of children; headache, and inflammation caused by contact with the urine of the house lizard. *Moringa pterygosperma etc.*, in ascites, gout, calculi, rheumatism, enlarged liver or spleen, intermittent fevers, influenzal coughs, spasmodic affections of the throat, bronchi and the bowels, epileptic and hysterical fits and externally in fainting fits, comatose conditions, glandular swellings, headache, earache toothache, bites of rabid animals, inflamed parts, to relieve spasms and to expedite delivery. *Moschus moschiferus and its preparations* in typhold conditions, low and adynamic fevers, delirium tremens, coma, meningitis brain affections, tetanus, epilepsy, hysteria, colic, spasmodic affections, palpitation of the heart, colliquative sweats, mental and bodily fatigue, insomnia, metastatic gout, lung

affections and dyspepsia. *Mucuna prurians etc.*, in dropsy, dyspepsia, worms, colic, leucorrhoea, spermatorrhoea, impotence. nervous diseases and externally for elephantiasis and scorpion stings. *Musa sapientum* etc., in sprue, catarrhal and inflammatory diarrhoea, scurvy, acidity, heartburn, gastritis, flatulence, gonorrhoea, intoxication of drunkards, dysmenorrhoea, menorrhagia, strumous affections and externally haemorrhages and as eye-shade in eye-diseases. *Myrica sapida etc.*, in throat and lung affections, phthisical diarrhoea, chronic gonorrhoea and gleet and externally scrofulous and aphthous ulcers, earache, nasal catarrh and headache, toothache and piles. *Myristica fragrans etc.*, in summer diarrhoea, humoral asthma, colic, neuralgia, spasmodic cough, obstructions of the liver and spleen and externally chronic rheumatism, sprains, paralysis and painful cramps in cholera. *Myristica malabarica* in nervous diseases and externally chronic rheumatism, earache and indolent ulcers. *Myrtus caryophyllus* in dyspepsia, indigestion, debility and externally rheumatic pains, headaches, toothaches and coryza. *Myrtus communis* in affections of the respiratory organs and the bladder, diarrhoea, dysentery and externally rheumatic affections, haemorrhages, foetid ulcerations, deep sinuses, skin diseases, leucorrhoea, prolapsus of the uterus, wounds and baldness. *Mytilus, margaritiferus & preparations* in impotency, cough, phthisis asthma, heart-burn, ardor urinae, nervous diseases, chronic headache, epilepsy and other convulsive attacks, piles, gonorrhoea, gleet, leucorrhoea, spermatorrhoea, heart-disease, dyspepsia, jaundice, biliouness, diabetes, general debility, urinary diseases and to prevent abortion.

Nardostachys jatamansi in typhoid symptoms, epilepsy and other nervous, convulsive ailments, palpitation of the heart, gastric disorders, general and seminal debility. *Nelumbium speciosum* in coughs, bleeding piles and other haemorrhagic affections, externally leprosy and other skin affections, cephalalgia and to cool the head and eyes. *Nerium odorum* etc., in menstrual and renal complaints and externally haemorrhoids, cancers, ulcerations and other skin complaints, snake and other venomous bites and in ophthalmia. *Nigella sativa etc.*, in intermittent fevers, diarrhoea, loss of appetite, worms, dropsy, puerperal and uterine diseases, locally in aphonia, skin diseases, swellings in hands & feet and to preserve clothes from the ravage of insects. *Nicotiana tabacum etc.*, for external use in rheumatic affections, spasmodic coughs, nervous irritability, chronic giddiness and fainting, colic and gripes and to the spine in tetanus. *Nyctanthes arbor-tristis* in chronic, bilious and intermittent fevers, rheumatism, sciatica and externally to cure scurvy and affections of the scalp etc. *Nymphoea species* in heat of the body, diabetes, piles, dyspepsia, diarrhoea, internal haemorrhages, and externally in ophthalmia.

Ochrocarpus longifolius in dysentery, irritability of the stomach, excessive sweating and externally toothache. *Ocimum species* in catarrhal fevers, respiratory affections dysentery, gastric, genito-urinary and renal diseases, hepatic affections and externally earache, rheumatism, nasal myosis, ozoena, swollen hands or feet and skin diseases. *Ophiorrhiza mungos* in bites of snakes and mad dogs. *Orchis mascula* in phthisis, diabetes, chronic diarrhoea and dysentery, impotency, hemiplegia and paralytic

affections. *Oryza sativa* in irritable or inflammatory state of the stomach, bowels or kidneys, dyspepsia, gastric and duodenal ulcers, eruptive fevers, and externally inflammatory affections of the skin, burns and scalds, wounds and ulcers. *Os sepie, its preparations* in itches, prickly heat and other skin diseases, otorrhoea and conjunctivitis. *Osterea edulis & its preparations* in diarrhoea, dyspepsia and chronic intestinal disorders, phthisis, abdominal tumours, enlarged liver and spleen, loss of appetite and seminal weakness. *Oxalis corniculata* in dyspepsia, datura poisoning, dysentery, enteritis, prolapsus of the rectum, piles, difficult micturition and externally in bilious headaches and to remove corns, warts and other skin excrescences.

Paederia foetida in colic, spasm, rheumatism, gout and externally in rheumatism with contraction and stiffness of the joints and in toothache. *Paeonia emodi* in colic, uterine disorders, epilepsy, bilious obstructions, diarrhoea and externally bruises, sprains etc. *Pandanus odoratissimus* in sterilty and threatened abortion and externally headaches, rheumatism, earache, epilepsy and throat affections. *Papaver somniferum* in diarrhoea, dysentery, diabetes, coughs, bronchitis, asthma, irrritable heart and angina, rheumatism, tumours, cancer, carbuncle, abscesses and ulcers, insomnia, colic, visceral obstructions, intestinal and genito-urinary irritations and spasmodic, inflammatory pains, nervous weakness and exhaustion, neuralgia, mental excitement, violent delirium and externally sprains, contusions, spasms, uterine affections, irritable ulcers, toothache, earache, ophthalmia, chronic rheumatism, enlarged and inflamed glands, painful piles,

and pains of various sorts. *Parmelia perlata* in dysentery, diarrhoea, dyspepsia, spermatorrhoea, and amenorrhoea. *Pavetta indica* in ascites, renal dropsy, visceral obstructions and externally painful piles. *Pavonia odorata* in internal haemorrhages and inflammations. *Pedalium murex* in calculi, urinary irritations and diseases, impotency, uterine and puerperal diseases and locally ulcers. *Peganum harmala* in asthma, colic, jaundice, amenorrhoea and locally palsy and lumbago. *Pericampylus incanus* in snake-bites. *Peteroselinum sativum* in uterine and renal diseases, epileptic fits and externally sore eyes and breasts. *Peterospermum species* in uterine diseases, leprosy, blood diseases and externally nervous headache. *Peucedanum species* in gastric and intestinal disorders and externally rheumatic joints, boils and abscesses. *Phaseolus speeies* in gastro-intestinal catarrh or inflammation, piles, paralysis, cystitis, rheumatism, liver and nervous affections, leucorrhoea and seminal debility and externally aching bones and joints, abscesses, inflammations, ophthalmia and neuralgias. *Phoenix species* in general debility, ague, bronchial and genito-urinary affections and externally headaches, piles, ophthalmia and corneal opacity. *Phyllanthus species* in jaundice, genito-urinary diseases, dysentery, diabetes, and externally ulcers and inflammations, spongy and bleeding gums, uvulitis and tonsillitis. *Physalis species* in diarrhoea, dysentery, anaemia, gout, rheumatism, nephritis and urinary diseases. *Picrorrhiza kurroa* in intestinal obstructions worms, elephantoid and malarial fevers. *Pimpinella anisum* in bronchial and gastro-intestinal complaints and locally headache and flatulent colic. *Pinus species* in

bronchial affections; chronic rheumatism, gout, leucorrhoea, gleet, urethritis, seminal debility and externally ulcers, abscesses, enlarged liver and painful chest. *Piper species* in cough and catarrh, inflammations of the nose, throat, larynx and bronchi, constipation, worms, colic, tympanites, dyspepsia, gastritis and renal diseases, visceral enlargements and externally boils, piles, paralysis, toothache, earache and painful eye affections. *Pistacia species* in gonorrhoea, leucorrhoea, impotency, sluggish liver, catarrhs of the respiratory and urinary passages and externally dental caries, toothache, sore mouth and tongue. *Plantago ispagula etc.*, in irritable and inflammatory conditions of the respiratory, gastro-intestinal and genito-urinary organs, intestinal ulceration, piles and externally rheumatic and gouty affections, swellings and irritable surface of the skin. *Plumbago species* in secondary syphilis, skin diseases, leprosy, piles, gastric and digestive complaints, abortion, post-partum haemorrhage, rheumatic complaints, and externally rheumatic and paralytic affections. *Plumbum & its salts* in chronic diarrhoea and discharges from gastro-intestinal and genito-urinary organs, night sweats of phthisis, epilepsy, aneurism of the aorta and hypertrophy of the heart and externally excoriations, contusions, sprains, baldness, itching, skin diseases, small-pox, rectal haemorrhage, piles and eye complaints. *Podophyllum emodi* in torpid liver and bilious fevers. *Polyporus officinalis* in night-sweats of phthisis, spasmodic cough and externally inflamed breasts and leech bites. *Pongamia glabra etc.*, in flatulency, dyspepsia, diarrhoea, bleeding piles, gonorrhoea, urethritis, diabetes, whooping cough and

externally skin diseases, rheumatism, foul ulcers and leprosy. *Prunus amygdalus etc.*, in bronchial diseases, painful urinary and kidney affections, diabetes, torpid and enlarged liver and spleen, piles, gonorrhoea and externally neuralgias, irritable sores and skin eruptions. *Potassium salts* in urinary diseases, uric acid diathesis, uterine and urinary irritability, anuria, haemorrhages from internal organs, enlarged lymphatic and secreting glands, enlarged spleen, cirrhosis of the liver with ascites, asthma and bronchial affections, piles, dysentery, colic, intestinal worms gout and rheumatism, and locally chronic skin diseases, gout and rheumatism, eruptive fevers, bruises and abrasions, headache and delirium. *Portulaca species* in diseases of the lungs, liver, kidneys, bladder and bowels, scurvy and externally erysipelas, burns, scalds and various skin diseases. *Psidium guyava etc.*, in constipa-tion, gout, diabetes, prolapsus ani, scurvy and locally swollen gums. *Psoralia corylifolia* in leucoderma and skin diseases. *Pterocarpus marsupium* in diarrhoea, pyrosis etc., and locally toothache, boils, sores, and other skin diseases. *Pterocarpus species* in bleeding piles, haemorrhages, chronic dysentery, leucorrhoea, gastralgia and locally inflammations, piles, headaches and superficial excoriations of the genital organs and herpes zoster. *Ptychotis ajowan etc.*, in flatulence, indigestion, colic, dyspepsia, diarrhoea, cholera, biliousness, hysteria, worms, spasmodic affections, dipsomania and externally rheumatic and neuralgic pains, cramps in the limbs, poisonous insect bites and diseases of the ear aud nose. *Punica granatum* in chronic diarrhoea, dysentery and other chronic bowel complaints, tapeworms, chronic feverishness, splenic

enlargement, piles, and locally relaxed sorethroat, vaginal and uterine discharges and ulcers. *Putranjiva Roxburghii* for sterility in women. *Pyrethrum indicum* in rheumatism, gout, enlargement of the liver and spleen, and worms. *Pyrus species* in dyspepsia, gonorrhoea, dysentery, and other inflammations of the mucous membranes, calculi, gouty and rheumatic complaints, sick headaches, chronic catarrh of the mouth and throat.

Quassia excelsa etc., in dyspepsia, anorexia, bilious fevers, hysteria, worms and locally thread-worms. *Quercus infectoria* in diarrhoea, gonorrhoea, gleet, leucorrhoea and other vaginal discharges and internal haemorrhages and locally prolapsus recti, relaxed sorethroat, enlarged tonsils, haemorrhoids etc. *Quinetum* in gastric disorders, intermittent fever, convalescence and debility after fevers, enlarged spleen and neuralgias. *Quinine* in fevers, intermittents and agues, pneumonia and acute rheumatism, pyaemia and all exhausting suppurative conditions.

Randia dumetorium in diarrhoea, dysentery, colic, rheumatism, asthma, bronchial & chest affections and locally headaches, orchitis, acne etc. *Ranwolfia serpentina* in bites of poisonous reptiles and insects, corneal opacity, and internally colic, cholera and other painful bowel affections. *Raphanus sativus* in gonorrhoea, piles, gastrodynia and other gastric affections, urinary diseases and scurvy. *Rheum emodi* in diarrhoea and that due to teething, atonic dyspepsia, chronic dysentery, duodenal catarrh and jaundice; but *prohibited* in gout, rheumatism, epilepsy or any uric acid disease, owing to the oxalic acid it contains. *Rhinacanthus communis* in ringworm and

Dhobie itch. *Rhus succedania etc.*, in cough, asthma, catarrhal fever and bronchial troubles, infantile diarrhoea etc., due to teething and externally obstinate skin diseases, bleeding gums, epistaxis, gleet, leucorrhoea and other mucous discharges. *Ricinis communis* in inflammatory condition of the bowels & urinary organs, infantile diarrhoea, lying-in-state, piles, painful affections of the rectum, any foreign and irritant body in the stomach, nervous and articular rheumatic affections, and locally gouty and rheumatic swellings, deficient mammary secretion, sore nipples, conjunctivitis, foreign body in eyes and ears. *Rosa species* in sorethroat, enlarged tonsils, night sweats of phthisis, uterine, and pulmonary haemorrhages, and locally throat affections, aphthae, burning of the skin, and eye-diseases. *Rosebay* in gout, rheumatism, neuralgia, constipation, chronic affections of the testes and filariasis. *Rourea santaloides* in rheumatism, scurvy, syphilis, diabetes, pulmonary complaints and externally ulcers and other skin diseases. *Rubia cordifolia* etc., in dropsy, paralysis, jaundice, amenorrhoea and visceral obstructions and externally inflammations, burns, ulcers and other skin diseases. *Rumex crispus etc.*, in scurvy and other skin eruptions, syphilis, scrofula, dyspepsia, hepatic disorders, laryngeal catarrh, chronic dysentery and locally toothache, spongy gums and burns. *Ruta graveolens* in flatulent colic, hysteria, infantile convulsions, worms, bronchial and pulmonary affections and externally paralysis.

Saccharum officinarum etc., in disorders due to *pitta* and *vata*, lead colic, urinary diseases, dysentery, strangury, spermatorrhoea and in poisoning by copper, arsenic, or

corrosive sublimate and externally foul ulcers, carbuncles, boils, burns, obstinate headache, poisonous insect bites, country sore eyes, foreign bodies in the eyes, mammary abscesses, night sweats of phthisis and haematuria, *Saline substances* in colic, indigestion, flatulence, enlarged liver and spleen, dyspepsia, bowel complaints, abdominal tumours, intestinal worms, dysentery etc. *Salvadora species* in low fever, amenorrhoea, scurvy, snake-bites and poisons of various sorts, enlarged spleen, rheumatism, tumours and lithiasis and externally to strengthen teeth, and gums, and to painful tumours, piles and rheumatic joints. *Santalum album* in gastric irritability, dysentery, gonorrhoea, gleet, urethral haemorrhage, pyelitis, chronic cystitis etc., bronchial catarrh, and externally scabies and other skin diseases and eruptions, prickly heat, profuse sweating, pimples on the nose, headaches and fevers. *Sapindas trifoliatus etc.*, in colic, worms, venomous bites, hemicrania, hysteria, epilepsy, gout, rheumatism, paralysis and externally poisonous insect bites, amenorrhoea and difficult and delayed labour. *Saraca Indica* in uterine affections and haemorrhages, bleeding piles and dysentery. *Saussurea lappa etc.*, in cough, asthma, dyspepsia, chronic rheumatism, and externally skin diseases, tumours, cephalalgia, diseased joints, wounds and ulcers. *Saxifraga ligulata* in gravel and stone in bladder, uric acid diathesis, opium poisoning and externally in teething among children, boils and eye-affections, *Scilla Indica* in cough, strangury, dysuria and dropsy. *Scindapsus officinalis* in diarrhoea, asthma and phlegmatic affections. *Semecarpus anacardium* in scrofulous affections, syphilis, leprosy, palsy paraplegia, epilepsy and other nervous diseases, dyspepsia,

asthma, bronchitis, anaemia, some fevers, enlarged spleen, piles, acute arthritis, rheumatic and gouty complaints, chronic gastritis, neuritis, chronic arsenical poisoning, dysmenorrhoea, amenorrhoea, and externally scrofulous, venereal and leprous affections, warts and piles. *Serpent poison preparations* in collapse stage of fever, cholera, ascites, plague, low fevers with brain complications and cardiac and respiratory weakness, chronic malarial fevers and externally leucoderma. *Sesamum Indicum etc.*, in gonorrhoea, dysentery, bleeding piles, amenorrhoea, dysmenorrhoea and externally burns, scalds, wounds, ulcers and other skin diseases and eye-complaints. *Sesbania species* in diarrhoea, menorrhagia, enlarged spleen, worms and externally inflammatory rheumatic swellings, hydrocele, boils, abscesses and cutaneous eruptions. *Serum preparatum* in excoriations, cracks, fissures etc. *Shorea robusta* in dysentery, diarrhoea, bleeding piles, gonorrhoea and externally lumbago, chilblains, ulcers and other skin diseases. *Sida acuta etc.*, in febrile affections, convalescence, dyspepsia, chronic bowel complaints, intestinal worms, rheumatic affections, gonorrhoea and externally boils and abscesses. *Sida cordifolia* in bleeding piles, colic, tenesmus, gonorrhoea, haematuria, strangury, spermatorrhoea, leucorrhoea, cystitis, chronic dysentery, nervous diseases and externally elephantiasis, nervous and rheumatic affections, ophthalmia and boils. *Siegesbeckia orientalis etc.*, in ague, rheumatism, renal colic, scrofulous and syphilitic affections, diseases of urethra and externally ringworm and other parasitic eruptions and gangrenous sores. *Silicium salts* in dysentery, ardor urinae, anuria, internal haemorrhages, gonorrhoea, calculus affections,

obstinate vomiting, diarrhoea, menstrual disorders and locally burns and scalds, syphilitic ulcers, chronic skin diseases, aphthae, epistaxis and inflamed glands. *Sinapis juncea* in drunkenness' narcotic and other poisonings and externally in apoplexy, convulsions, delirium, violent headache, sleeplessness, cholera, colic, spasms of the bowels, vomiting, retching, coughs, difficult breathing, whooping cough, toothache, faceache and other neuralgic pains and chest affections. *Smilax chinensis etc.*, in rheumatism, gout, epilepsy, chronic nervous diseases, seminal weakness and syphilitic cachexia. *Sodium Biborate* in tedious labour, dyspepsia and liver complaints. *Sodium salts and preparations* in acidity of the stomach, painful dyspepsia, diarrhoea, flatulence, anorexia, congested liver, urinary diseases, uric acid gravel, anuria, Bright's disease, typhoid fever, malarial fever, rheumatism, gout, ascites, menstrual irregularity and puerperal convulsions, spasmodic and phlegmatic complaints, epilepsy, heart disease, hysteria, intestinal worms and externally skin diseases and sloughing ulcers, sore nipples, fissures, inflamed piles, distressive irritation of the genital organs, vaginal discharges, aphthae, thrush, parasitic stomatitis, urethritis, gonorrhcea, purulent ophthalmia, diphtheria, inflamed glands, influenza, chest diseases, thread worms, neuralgic headache, ozoena, rheumatic and muscular pains. *Solanum dulcamara* in scrofula, syphilis, chronic rheumatism, skin diseases and catarrhal affections. *Solanum Indicum etc.*, in asthma, dry and spasmodic cough, chest pains, chronic fevers, colic, flatulence, worms, dysuria, dropsy, enlarged liver and spleen and externally toothache. *Solanum Nigrum etc.*,

in anasarca, heart disease, fevers, coughs, enlarged liver and spleen, and externally rheumatic and gouty joints, skin diseases and painful swollen testicles. *Solanum tuberosum* in scurvy, chronic cough, gout and locally burns. *Sonchus species* in ascites and hydrothorax. *Soymida febrifuga*, in dysentery, diarrhoea, intermittent fevers, general debility and externally rheumatic swellings. *Sphaeranthus hirtus etc.*, in bilious affections, goitre and other tumours, worms, bleeding piles, jaundice, glandular swellings, impotence and skin diseases. *Sida rhombifolia etc.*, in rheumatism, calculus troubles, gonorrhoea, gleet and scalding urine. *Spilanthus oleracea etc.*, in toothache, irritation of the gums, salivation, headache, paralysis of the tongue, stammering and locally inflammation of the periosteum of the jaw. *Spinacea oleracca etc.*, in fevers, inflammations of the lungs and bowels, urinary calculi, ankylostoma and locally sore throat. *Spondias mangifera etc.*, in bilious dyspepsia, scurvy, dysentery, gonorrhoea and leucorrhoea, wounds caused by poisoned arrows and locally earache. *Spongia officinalis* in dysentery, diarrhoea and other bowel complaints and externally for absorbing liquids, dilating cavities and suppurating prolapsed parts. *Squalus carcharius* preparations in cachexia, pulmonary consumption, atrophy of body, scrofulous abscesses, suppurating glands, affections of the joints and bones, ulcerations, discharges from the nose or ears, and skin diseases, stricture of the rectum, chronic hydrocephalus, spasmodic coughs and affections, chronic rheumatism and neuralgia. *Stannum preparations* in diseases of the blood, lungs and genito-urinary organs, gonorrhoea, spermatorrhoea, diabetes, gleet, loss of memory, haemoptysis, paralysis,

asthma, impotency, dyspepsia, jaundice, constipation and skin diseases. *Sterculia acuminata* in physical and nervous fatigue and locally wounds etc. *Strychnos colubrina etc.* in obstinate malarial fevers and cachexia and dyspepsia. *Strychnos ignatia* in cholera, asthma, dropsy, piles and externally swellings. *Strychnos nux-vomica* in diabetes, intermittents, dyspepsia, chronic constipation from atony, of the bowels, chronic dysentery, atonic diarrhoea, prolapsus of the rectum, gouty, rheumatic, paralytic and neuralgic affections and worms, tobacco-amaurosis, insomnia from over-fatigue, hydrophobia, bronchitis, emphysema, phthisis, impotency, spasmodic diseases, spermatorrhoea, excessive venery, alcoholism, opium and lead poisoning, nocturnal incontinence, retention of urine and externally, headaches, swollen glands, oedema of the hands, feet and abdomen, rat-bites and bites of venomous reptiles, muscular and chronic rheumatism, palsy and hypodermically in narcotic poisoning, chronic alcoholism and snake-bite *Strychnos potatorum* in chronic diarrhoea, diabetes, gonorrhoea and irritation of the urinary organs and externally in lachrymation, chemosis in the conjunctiva and to boils. *Styrax benzoin* in jaundice, incontinence of urine, calculous disorders, distressing coughs, and externally laryngeal, bronchial and spasmodic coughs, cuts and wounds, foul, indolent ulcers and irritable skin eruptions and uterine discharges. *Sulphur and its preparations* in habitual constipation, piles, prolapsus, stricture, chronic dysentery, epilepsy and nervous diseases, chronic skin diseases, coughs, phthisis, chronic bronchitis with fever asthma, enlarged liver and spleen, acidity and dyspepsia, gout, chronic fevers, rheumatism, worms and blood parasites, tympanites, colic, ascites, meningitis and externally

skin diseases, scrofulous, rheumatic and other painful joints. *Swertia chirata etc.*, in chronic malarial fevers and dyspepsia, catarrhs, enlarged spleen and liver. *Symplocos racemosa etc.*, in bowel complaints dropsy, liver affections, fevers, uterine complaints, acute dysentery, chyluria, filariasis and externally eye diseases, spongy and bleeding gums, relaxed uvula, boils and other malignant growths.

Tabernamontana species in diarrhoea, worms and, externally, ophthalmia, toothache, abscesses and other skin diseases. *Tamarindus Indica* in constipation, intoxication from datura and spirituous liquors, scurvy, biliousness, bleeding piles, dysentery, scalding urine, colic and externally inflammatory swellings, aphthae, sore throats and indolent ulcers. *Tamarix gallica* etc, in leucorrhoea, dysentery, diarrhoea, coughs and chronic discharges and externally sloughing ulcers and phagedenic buboes. *Taraxacum officinale* in liver obstructions and visceral diseases, dyspepsia, jaundice, dropsy, chronic skin diseases and cachectic disorders. *Terminalia arjuna etc.*, in haemorrhages and other fluxes, diarrhoea, dysentery sprue, heart diseases, spermatorrhoea, gonorrhoea, fractures, contusions, and externally ulcers, acne and other skin diseases. *Terminalia belerica* in cough, sore-throat, dyspepsia, dyspnoea, dropsy, piles and diarrhoea and externally to inflamed parts, rheumatism, ophthalmia etc. *Terminalia catappa etc*, in headache, colic and locally scabies, leprosy and other skin diseases, *Terminalia chebula* in fevers, coughs, asthma, urinary diseases, piles, worms, muscular rheumatism, atonic dyspepsia, chronic diarrhoea, vomiting and mucous stools, flatulence, colic, enlarged spleen and liver, and externally aphthae, chronic ulcerations, burns, scalds and other skin diseases, bleeding

piles and some vaginal discharges. *Terminalia tomentosa etc.*, in atonic diarrhoea and locally indolent ulcers. *Tiriake faruka* in myxoedema, beriberi, anasarca, rheumatism, tetanus, seminal debility, purging and vomiting, collapse of cholera, and as an antidote to poisoning by venomous animals. *Toddalia aculeata etc.*, in remittent and malarial fevers, diarrhoea constitutional debility, convalescence after fever and other exhausting diseases and externally rheumatism and boils. *Trapa bispinosa etc.*, in bilious affections, diarrhoea, nervous and general debility, leucorrhoea and menorrhagia. *Tribulus terrestris etc.*, in diseases of the genito-urinary system, calculous affections, bloody urine, gleet, cystitis, gonorrhoeal rheumatism, gout, uterine disorders, impotence, Bright's disease with dropsy, spermatorrhoea and phosphaturia. *Trichosanthes species* in bilious fevers, worms, skin diseases, leprosy and externally headaches earaches, sores in the ears and nostrils and other ulcers, epilepsy and mental troubles, congested liver and alopecia. *Trigonella foenugraecum* in dyspepsia, colic, flatulence, dysentery, puerperal diarrhoea, rheumatism, chronic coughs, dropsy, enlarged liver and spleen, scrofula, rickets, anaemia and externally leucorrhoea, burns and inflamed parts. *Triticum sativum* in lumbago and painful joints, epistaxis, menorrhagia, poisoning by salts of mercury, copper, zinc, silver, tin and iodine and externally inflamed surfaces as erysipelas, burns, scalds, tetter, ringworm, hollow ulcers and other skin lesions. *Tylophora asthmatica* in dysentery, diarrhoea, respiratory affections, asthma, whooping cough, syphilitic rheumatism, gout, impurity of blood and locally gouty pains.

Urgina Indica etc, in bronchitis, emphysema, spasmodic croup, cardiac and renal dropsy, chronic Bright's disease, rheumatism, calculous and paralytic affections, leprosy and skin diseases and externally inveterate corns, warts and burning of the soles of feet. *Urine (cow's) and preparations* in enlarged abdominal viscera, painful dyspepsia, ascites, anasarca, jaundice leprosy, chronic prurigo and other obstinate skin diseases. *Urine (goat's) preparations* in epilepsy, as laxative and diuretic. *Urine (horse's)* in phlegm, ringworm and, intestinal worms. *Urine (Ox's)* in jaundice, worms, oedema and diarrhoea. *Urtica dioica* in bronchial and uterine catarrh and haemorrhage, asthma and locally burns.

Valeriana species in hysteria, neuralgia, epilepsy, chorea and other narcotic conditions. *Vanda roxburghii* in secondary syphilis rheumatic and nervous diseases. *Vateria Indica etc*., for external use in chronic rheumatism and other painful affections, carbuncles and other ulcerations. *Verbascum thapsus* in coughs, asthma and other pulmonary complaints and locally inflamed parts. *Vernonia anthelmintica etc.*, in round worms, white leprosy and other chronic skin diseases and externally also for the same and rheumatism. *Vernonia cinerea etc.*, in malarial and other fevers, dropsy, spasm of the bladder, strangury, worms, blood-shot eyes and externally leprosy, guineaworm and chronic skin diseases. *Viburnum foetidum* in uterine diseases, post partum haemorrhage, threatened abortion, dysmenorrhoea and after-pains. *Viola species* in bilious and liver affections, kidney diseases, prolapse of the rectum and uterus, coughs and tightness of the chest in children. *Viscum alba etc.*, in splenic and hepatic enlargements,

men orrhagia, haemorrhages, hysteria, epilepsy, palpitation of the heart and locally abscesses. *Vitex negundo* etc., in catarrhal and puerperal fevers, splenic enlargement, irritable bladder, rheumatism, dycpepsia, colic, worms, diarrhoea, liver diseases, haemoptysis, intestinal haemorrhage and externally acute rheumatism, arthritis, orchitis, gonorrhoeal epididymitis, enlarged spleen, catarrh and headache, foetid, gangrenous and scrofulous sores, glandular swelling, sinuses and syphilitic skin diseases. *Vitex pedicular* in malaria *kala-azar* and haemoglobinuric fever. *Vitex trifolia* in intermittents, enlarged spleen, amenorrhoea and locally rheumatic pains and sprains. *Vitis quadrangularis etc.*, in bowel complaints, indigestion, irregular menstruation, scurvy, asthma and externally fractures of bones, otorrhoea, and epistaxis. *Vitis vinifera* in bilious fever, anaemia, wasting diseases, heart-diseases, Bright's diseases, gout, acid dyspepsia, genito-urinary diseases, coughs, catarrhs, jaundice, rheumatism, chronic diarrhoea, piles, stone in the bladder and orchitis. *Viverra civetta* in hysteria and nervous exhaustion.

Withania somnifera etc., in alcoholism, emphysematous dyspnoea, consumption, general and seminal debility, nervous exhaustion, loss of memory, loss of muscular energy, spermatorrhoea, sterility, lumbago, scrofulous and other glandular swellings and externally skin diseases, obstinate ulcers and rheumatic swellings. *Woodfordia floribunda* in diarrhoea, dysentery and other bowel complaints, internal haemorrhages, leucorrhoea, piles, liver disorders and externally foul ulcers and wounds.

Xanthium strumarium *etc*; in malarial fever, urinary and renal complaints, gleet, leucorrhoea, menorrhagia, cancer and struma. *Xanthoxylum species* in fever, dyspepsia, urinary diseases, rheumatism and locally toothache.

Zea mays in irritable bladder and lithiasis. *Zinc salts and preparation* in syphilitic and scrofulous affections, chronic fever, gonorrhoea, leucorrhoea, epilepsy, hysteria, whooping cough, asthma, dipsomania and externally eye-diseases, abrasions, inflamed skin, eczema, wounds, burns and other skin affections. *Zingiber officinalis* in dyspepsia, flatulence, colic, stomach ache, indigestion, biliousness, vomiting, spasms, diarrhoea, colds, coughs, asthma, throat complaints, intermittents, general dropsy, (but not in that of Bright's diseases, chronic heart-disease), gout and chronic rheumatism, and externally neuralgias, headaches, cramps, fainting, vaginismus and in the collapse stage of cholera. *Zingiber zerumbet* in coughs, asthma, worms, leprosy and skin diseases. *Zizyphus jujuba etc.*, in bilious affections, diarrhoea, delirium, pectoral complaints and externally boils, abscesses, carbuncles and other ulcers.

APPENDIX III.

Substitutes for Imported Foreign Drugs.

Indian Drug	*Sustitute for*	*Foreign Drug.*
Abrus precatorius, root	...	Liquorice root.
Do extract	...	do extract.
Acacia arabica, bark-decoction	...	Oak-bark decoction.
Acacia farnesiana, gum	...	Gum Arabic.
Acalypha indica, juice of plant	...	Senega.
Adansonia digitata, bark	...	Quinine.
Adhatoda vasaka	...	Senega.
Ailanthus malabarica	...	Calumba root and Quassia.
Allium cepa & A. sativum	...	Smelling salts.
Althaea officinalis	...	English marsh-mallow.
Andropogon citratis, oil	...	Cajaput oil.
Andrographis paniculata, entire plant.		Himalayan chiretta & Quassia.
Arachis hypogeae, oil	...	Olive oil.
Areca catechu, extract	...	Pale catechu.
Aristolochia indica, stem & root	...	Serpentary.
Artemesia maritima	...	Santonin.
Berberis aristata, root	...	Serpentary.
Do bark-extract	...	Cinchona bark-extract & Quinine.
Bryonia epigoea	...	Chiretta.
Butea frondosa, seeds	...	Santonin.
Do gum	...	Kino gum.
Caesalpinia sappan, wood	...	Logwood.
Do extract	...	Logwood extract.
Calotropis gigentea (vegetable mercury), root-bark.		Ipecacuanha, Mercury & Sarsaparilla.

Carica papaya, juice	... Santonin.
Carum copticum, fruit	... Peppermint, dill, aniseed & caraway.
Cassia lanceolata	... Alexandrian senna.
Cassia species, leaves extract	... Colocynth extract.
Cera alba	... Theobroma oil.
Cinnamomum glanduliferum	... Sassafras.
Cissampelos pareira, root	... Pareira root.
Citrullus colocynthis, extract	... Colocynth extract.
Claviceps purpurea (growing on Indian wheat).	Ergot.
Clerodendron inerme	... Quinine.
Cocculus cordifolius	... Calumba.
Do tincture	... Tincture of Hop.
Do decoction	... Iceland moss-decoction.
Cocculus indicus, alkaloid	... Strychnia.
Cocculus villosus	... Sarsaparilla.
Cochlospermum gossypium, gum	... Tragacanth.
Colchicum luteum	... Colchicum autumnale.
Combretum pilosum (found in Assam).	Santonin.
Coptis teeta, tincture	... Tincture of Hop and Calumba.
Coscinium fenestratum, stems	... Calumba root.
Crinum asiaticum, bulb	... Squill.
Do infusion	... Ipecacuanha infusion.
Croton tiglium, seed oil	... Elaterium.
Datura alba, poultice	... Conium poultice.
Datura fastuosa *var.*, alba, leaves.	Belladonna leaves.
Do seeds.	Strammonium seeds.
Diospyros embryopteris, extract.	Logwood extract.

Dipterocarpus turbinatus	... Copaiba.
Do compound tincture.	Tincture of cubebs.
Eclipta alba & E. prostata	... Taraxacum.
Embelia ribes, berries	... Kousso & Male-fern.
Euphatorium ayapana, infusion	... Serpentary infusion.
Eurycoma longifolia	... Quinine.
Feronia elephantum, gum	... Gum acacia.
Ferula galbaniflua	... Galbanum.
Garcinia indica, butter	... Vaseline; Spermaceti & Oil of Theobroma.
Garcinia morella, gum rosin	... Officinal gamboge.
Gentiana kurooa	... Gentiana lutea.
Gossypium herbaceum, root-bark.	Ergot.
Gracilaria lichenoides, decoction.	Iceland moss decoction.
Hemidesmus indicus, root	... Sarsaparilla root.
Hermodactylus gol	... Colchicum.
Herpestis monniera	... Digitalis.
Hibiscus rosa sinensis	... English marsh mallow root.
Ipomoea hederaceae, extract	... Extract of Jalap.
Do pill	... Compound gamboge pill.
Ipomoea turpethum	... Jalap.
Liquidambar orientalis	... Copaiba.
Luffa amara, kernel of seed	... Ipecacuanha.
Mallotus phillipinensis	... Male-fern.
Malva sylvestris	... Marsh mellow.
Mangifera indica, seeds	... Santonin.
Melia azadirachta, leaf-poultice	... Linseed poultice.

Michelia champaka, bark	... Guaiacum & Cascarilla bark.
Mirabilis jalappa	... Jalap.
Moringa pterygosperma	... Horseradish.
Do compound infusion.	Infusion of Cusparia.
Musa sapientum, young leaf	... Guttapercha tissue.
Mylabris cichorii, cerate and plaster.	Cerate & Plaster of Cantharides.
Myrtus caryophyllus	... Pimento.
Nardostachys jatamansi, root	... Valerian root.
Naregamia alata	... Ipecacuanha.
Onosma bracteatum	... Sarsaparilla.
Oryza sativa, decoction	... Barley decoction.
Pharbitis nil	... Jalap.
Pinus longifolia, oleo-resin	... Galbanum.
Do ointment	... Ointment of Elemi.
Plantago ispaghula, decoction	... Barley decoction.
Do ovata, seeds	... Linseed infusion or tea.
Plumbago rosea	... Cantharides.
Do plaster	... Cantharides plaster.
Do bark	... Mezereon bark
Podophyllum emodi (vegetable calomel).	Calomel & Podophyllum
Ptychotis ajowan	... Oils of Lavender, peppermint, thyme, dill, caraway, coriander & anise.
Punica granatum, bark-decoction.	Decoction of Oak-bark.
Do root-bark	... Male-fern.
Randia dumetorium	... Ipecacuanha.

Rumex maritimus & R. Nepalensis	Rhubarb.
Samadera indica, wood & bark ...	Quassia.
Santalum album, oil ...	Copaiba.
Scilla indica, bulb ...	Squill.
Sesamum indicum, expressed oil from seeds.	Olive oil.
Smilax chinensis, syrup ...	Sarsaparilla syrup.
Soymida febrifuga, decoction ...	Decoction of Oak-bark.
Squalus carcharis, oil ...	Cod-liver oil & Lard.
Terminalia arjuna ...	Digitalis and adrenalin.
Terminalia chebula dried fruits...	Oak- galls.
Do fruit powder...	Tannic acid.
Tinospora cordifolia, root & stem.	Calumba root; Sassafras.
Toddalia aculeata, root-bark ...	Caspian bark & Quinine.
Toddy poultice ...	Yeast poultice.
Trichosanthes cordata ...	Calumba root.
Triphala ointment ...	Calamine cerate.
Tylophora asthmatica, root & leaves.	Ipecacuanha & Sarsaparilla.
Typha angustifolia ...	Medicated cotton wool.
Urginea indica, bulb ...	Squill.
Valeriana leschenaultic *var.*, brunoniana, & hardwickii, root stalk.	Valerian.
Vateria indica, resin ...	Pine resins.
Vernonia anthelmintica, seeds ...	Santonin.
Viola odorata ...	Ipecacuanha.
Vitex pedicularis ...	Quinine.
Withania coagulans ...	Rennet.

APPENDIX IV.

Approximate Percentage Composition & Calories in Foods & Dietetic Articles.

Names of Articles.	Average percentage of				Calories per pound. ‡	Percentage of Total Nutriment.
	Proteids or Flesh formers.	Fats & Starch or Heat-givers.	Mineral matters or Salts	Watery matters.*		
Almonds ...	21	72.2	2	4.8	3030	87
Apples ...	1.2	10 2	0.3	88.3	200	...
Apricots ...	1	13.5	0.5	85	270	...
Arrow-root ...	4	82	1	13	1600	...
Bajri ...	10	73	2	15	...	...
Bananas	1.3	22 6	0.8	75.3	460	...
Barley, Pearl ...	11	72	2	15	...	90
Barley ...	6	77	1	16	2780	84
Beans ...	23	60.1	2 9	14	1520	...
Beef ...	20.5	4 5	1.6	74.4	...	...
Biscuits ...	15.6	74.7	1.7	8	1935	...
Bran ...	16	47	6	...	...	...
Bread, wheaten ...	8	50.7	1.3	40	1990	90
Breast-milk ...	2.4	10.2	0.4	87	280	...
Butter, English ...	1.5	·7.5	1	10	3605	...

* Besides the watery matters this includes refuse matter also.

‡ "The term Calorie means the amount of heat that is required to raise 1 pound of water 4° F. The Calorie is a standard which is as applicable in estimating the energy value of foods as the gramme or pound is in calculating weight."

The method of applying the Calorie standard to a food is very simple; in the case of Protein and Carbohydrates the percentage contained in the food is multiplied by 4.1 and in the case of fat by 9.3, the result is the total Calories yielded by 100 grammes of the food. (1 lb. 453·592 grammes.)—O'Meara.

Names of Articles.	Average Percentage of Proteids or Fleshformers.	Fats & Starch or Heat-givers.	Mineral matters or Salts.	Watery matters.	Calories per pound.	Percentage of Total Nutriment.
Butter, clarified ...	0	100	0	0	4700	...
Butter milk ...	4	5	1	90	...	...
Cabbage ..	4	6	1 5	88 5	100	...
Caltrops, Water ..	4	82	1	13	...	...
Carrots ...	1	10.2	1	87.8	390	...
Cauliflower ..	3	5.5	0.8	90.7	...	...
Celery ...	2.1	3.8	0 8	93.3	80	...
Cheese ..	28	12	2	28	2145	64
Chestnuts { fresh ..	6.6	53.3	1.7	38.5	3240	...
Chestnuts { dried ..	10.1	81.4	2.7	5.8.		
Chicken ..	21.5	2.5	1.2	74.8	505	32
Chouli (Barbuti Dal) ...	24	59	3	14	...	...
Cocoanut { fleshy part ...	5 2	47.2	1	46.6	3040	...
Cocoanut { dried ...	6	89 2	1.3	3.5		
Cocoanut { milk .	0 5	9	0	90.5		
Coffee ..	3	78	10	12	...	...
Corn flour ...	9.3	71.5	2	14.2	1670	82
Cream ..	2.7	29.5	1.8	66	1260	69
Cucumber ..	1.3	3.2	0.5	95	...	...
Dates, dried ..	4	66	...	26	1440	..
Eggs ...	13.5	11.6	1.4	73.5	720	26
Figs, dried ...	6	63	.	20	380	...
Figs (fresh) ...	1.5	18.8	0.6	79.1	380	...
Fish, average ...	22	14	1	63	980	13
Fish, Herrings, fresh ..	10	8	2	80	1455	...
Fish, Salmon .	15	7	2	76	...	...
Flour, average ..	11	73	1	15	1616	~
Flour, fine ...	13	70	0 7	16.3	2700	120
Ghee—See Butter, clarified.						
Gooseberries ...	3.1	8 9	2	86	...	...

Names of Articles.	Average Percentage of				Calories per pound.	Percentage of Total Nutriment.
	Proteids or Flesh formers.	Fats & Starch or Heat-givers.	Mineral matters or Salts.	Watery matters.		
Gram, Bengal ...	23	66	3	8	...	...
" , Black (Phaseol)..	22	62	3	13	1170	...
" , Green (*Mung Dal*)	24	60	3	13	1600	14
Gram, Horse ...	23 3	61	3.7	12	...	...
Grapes ...	4.1	12.5	0.4	83	460	...
Ground-nut ...	31	56	4	9	...	...
Guavas ...	7.9	8.7	0.5	82.9	315	...
Lemons ..	1	2	7*acid*	84	208	...
Lentils (*Musur Dal*) ...	24	59	4	13	1660	83
Maize ...	10	74	2	14	...	...
Mangoes ...	1.8	10.3	0.5	87.4	220	...
Meat ...	22	14	1	63	715	28
Milk (Ass's) ...	2.2	7.7	0.5	89.6	...	...
" breast—See Breast-milk.—						
" (Buffaloe's) ...	6.1	11.6	0 9	81.4	...	...
" (Camel's) ..	4	8.6	0.8	86.6	...	...
" (Cow's) ...	5	8	1	86	378	22
" (Goat's) ..	4.3	9.2	0.7	85 8	...	...
" (Mare's) ...	2.0	6.8	0.3	90.9	...	...
" (Sheep's) ...	7.1	9.6	1 0	82.3	...	...
" tinned, Swiss condensed.	12	61	2	25	1600	...
" curd ...	23	19	1	57	...	...
Millet, Great (*Jaware*) ...	9	74	1	16	...	...
Millet, Little (*Kangni*) ...	12	70	1	17	...	...
Millet, Spiked—See Bajri.						
Molasses ...	...	69.7	7	...	...	...
Musk melons ..	2.7	7.2	0.6	89.5	385	...
Mutton ..	18	15	1	66	1690	34
Oats ..	11	69	3	17	...	...
Oatmeal ...	15	70	3	12	1920	89

Names of Articles.		Average Percentage of				Calorics per pound.	Percentage of Total Nutriment
		Proteids or Flesh formers.	Fats & Starch or Heat-givers.	Mineral matters or Salts.	Watery matters.		
Onion	...	2.1	8.5	0.5	88 9	220	...
Oranges	...	0.6	8·6	0.4	90.4	240	...
Parsnips	...	1	15	1	83	320	12
Peaches	...	4	6.5	1.5	88	192	...
Pea nuts	...	29	61.7	1.8	7.5	2570	...
Pear	...	4	11.5	0.5	84	288	...
Peas (*Matar Dal*)	...	25	58	2	15	...	...
Peas, dried	...	28.8	60 8	2.1	8.3	1655	86
Pine-apples	...	0.8	9.6	0.3	89.3	200	...
Plums	...	5	9	2	84	270	...
Pomegranates	...	4.2	18.4	0.6	76.8	460	...
Pork	...	9.8	48.9	2.3	39	...	...
Potato	...	2	23	1	74	770	24
Prunes	...	2	62	...	26	...	...
Radish (*Muli*)	...	1.2	4	0.8	94	...	...
Ragi	...	9	75	2	14	...	...
Raisins	...	3	75	...	14	600	...
Rice	...	5	84	1	10	2750	87
Sago	...	0.8	86	0.2	13	...	85
Skim milk	...	4.3	5.9	0.8	89	170	...
Spinach	...	4	4	2	90	...	...
Strawberries	...	3.8	6.8	1.7	87.7	...	...
Sugar	...	0	100	0	0	2900	...
Tomato	..	1.5	3.7	0.5	94.3	96	...
Turnips	...	1	7	1	91	238	12
Varagu.		12.6	73	2.4	12	...	...
Vetch (*Kesari Dal*)	...	28	56	3	13	...	...
Walnuts fresh	...	12	41.8	1.7	44.5	3300	...
Walnuts dried	...	15.6	77.8	2	4.6		
Water melons	...	7.1	0.2	0.3	92.4	140	...
Wheat	...	13	72	2	13	1675	88

APPENDIX V.

Vitamins in Foods & Dietetic Articles.

Vitamin constitutes an element "accessory food factor" recently discovered to exist in several of our important dietetic articles and found from careful investigation and experiments to be the most essential one for maintenance of health, in addition to the five well-known elements, proteins, carbohydrates, fats, salts and water. Vitamins exist in plants, but only in very minute quantities; it is found that food free from Vitamins is apt to cause diseases such as scurvy, beri-beri, rickets etc. It is even said that without Vitamins we slowly perish physically and mentally. Vitamins are obtained directly from a vegetable diet, or indirectly in the form of meat. Green grasses, vegetables and fruit are very rich in vitamins and it is from such sources that milk, human or animal, obtains the high percentage vitamins that is so valuable to infants and young animals.

"Vitamins" says Dr Hector Munro, a Harley street Specialist, 'are nothing more nor less than stored sun-light. The rays of light most valuable to health are those to the right of the spectrum and when those rays are excluded from an area in which a plant has been placed, the plant dies. These rays are caught and held by the fruits of the earth and are the vitamins of which so much has been heard lately. Oranges and lemons contain a higher percentage of stored sunlight than any other fruits in the world".

Vitamins have been classified into:—(a) Antirachitic or the Fat-soluble 'A'; (b) Antineuritic or the Water Soluble 'B'; (c) Antiscorbutic or the Water-soluble 'C'.

(*a*) The autirachitic vitamin or Fat-soluble 'A' promotes the growth and prevents rickets in young animals. The main sources of this vitamin are (1) certain fats of animal or vegetable origin, and (2) green leaves. Shortage of vitamin 'A' causes:—(1) cessation of growth or wasting; (2) reduced resistence to infectious diseases, especially lung or gland infections and eye-diseases; (3) failure in the development of bone and teeth, (4) anaemia; (5) corneal affections.

(*b*) The antineuritic or water-soluble 'B' vitamin prevents the occurrence of beri-beri in man and analogous diseases in animal. It is found to some extent in all natural foodstuffs, especially in the seeds of plants, in beans, nuts, fruits etc; also in grain not too thoroughly "milled" or fine. The finer the flour, the less are the vitamins. Milk, cheese and potatoes yield less antineuritic vitamins, while yeast retains large quantities of the vitamins which will rapidly cure exprimental polineuritis. This vitamin is soluble in water and is washed away from vegetables cooked in an excess of water. Shortage of vitamin 'B' causes:—(1) loss of appetite or depraved appetite; (2) gastro-intestinal derangements, indigestion, constipation, colitis and worms; (3) loss of weight, weakness and lack of vigour; (4) headache, anaemia and unhealthy skin; (5) Nervous and cardiac, vascular depression; (6) Oedema.

(*c*) The Antiscorbutic vitamin or water-soluble 'C' is necessary for the prevention of scurvy and is found in fresh vegetables, fruits and animals. Its richest sources are cabbages, turnips, lemons, oranges and tomatoes. Fresh lemonade has more 'C' if the lemon juice is added

last, when the liquid is cold. Milk and meat possess a definite but low anti-scorbutic value. The antiscorbutic vitamin differs from the anti-neuritic one in its distribution and properties, as well as in the nature of its influence to nutrition. This vitamin is less widespread than the anti-neuritic vitamin and is more sensitive to heat and drying than the antineuritic one. Cooking is apt to destroy this vitamin, and to cook vegetables twice is a fatal mistake, while the addition of soda renders them useless from the vitamin standpoint. Tinned foods which have been raised to a temperature of 120° C lose their anti-scorbutic properties; so also the bottled and dried fruits. It has also been shown that although dried pulses contain no antiscorbutic principles while still dry, the anti-scorbutic elements develop in 48 hours if they are moistened, kept warm and allowed to germinate. All dry food-stuffs are deficient in anti-scorbutic vitamins. The tissues of fresh vegetables dried at low temperature or their expressed juices preserved in the cold rapidly lose their anti-scorbutic property. Shortage of vitamin 'C' causes:—(1) Sallowness; (2) loss of vigour or energy; (3) fleeting pains in the limbs and joints in adults; (4) growing pains in children; (5) lowered resistence to infection and (6) difficult healing of cuts and abrasions.

(*d*) A most recent discovery made by some scientists is that the vitamin which prevents rickets is distinct from vitamin 'A' whose specified function is the promotion of normal growth and to the former the name vitamin 'D' has now been given. It is known as Dr. McCollum's antirachitic vitamin 'D'. It is found from experiments that vitamin 'D' which is present in milk is still increased

when the milk is exposed to ultra-violet light either from the sun or from some artificial source. On the other hand vitamin 'A' which is also an ingredient of fresh milk is destroyed by the same process. From experiments made it was also found that one set of chiks fed with milk that had been exposed to ultra-violet light developed the usual conditions resulting from the absence of vitamin 'A', while a second group fed with untreated milk developed normally.

(e) Another most recent addition to the vitamin family, which is apparently responsible for animal—and presumably human—fecundity has been "christened" "Fat-soluble E" by its discoverers Profs. Herbet Evans and George Burr who report concerning their most recent experiments and conclusions. Thus this vitamin hitherto designated merely by a non-committal "X" claims definite place in the group of strange activators of physiological functions, following Dr. McCollum's antirachitic factor, vitamin 'D'. Should all that is claimed for it prove valid the newcomer will take rank as in a sense the most important member of the entire group, for whereas the others are vitally important for the growth and welfare of animal organism, vitamin 'E' would appear to be solely responsible for the very existence of the organism itself. The animal—male or female, from whose dietary it is lacking, appears to be absolutely sterile. If offspring are to be born to perpetuate the race the aid of this vitamin must be invoked. An animal rendered sterile for an indefinite period by a special diet from vitamin 'E' may have fertility restored when fed with the vitamin either in regular foodstuffs that contain it or as an extract.

Fortunately for the perpetuation of the animal kingdom, the anti-sterility vitamin is abundant in nature. It is of interest to note, however, that its distribution is quite different from that of the "growth vitamin" known as Fat-soluble 'A', Milk-fat, for example though rich in vitamin 'A'. is poor in vitamin 'E'. Also we are told that cod-liver oil, though high in vitamins 'A' & 'D', is notably lacking in 'E'. Throughout the life of animals, 9 per cent, by weight of the ration may be constituted by cod-liver oil, a single drop of which daily is adequate for 'A' requirements, and yet sterility results. " In animal tissues in general the vitamin is present, but never highly concentrated. On the other hand, it is abundant in the organs of certain plants, especially in seeds and green leaves. Drying of the leaves does not impair the activity of the vitamin. Moreover " in the cases of both wheat germ and lettuce leaf, ether extraction of the desiccated substances remove 'E' quantitatively and secures for us oils which are efficacious in daily single drop (25mg.) administration. 'E' is probably present in most commercial oils, so that when the latter constitute a high proportion of the diet, fertility results. Such results have been secured with Wesson oil, cocoanut oil, olive oil". Oils in their natural state have a less concentrated 'E' content than wheat-germ, but alcoholic extracts of a hydrogenated product of cotton-seed oil may be fairly rich in the vitamin. Exceedingly concentrated extracts may be made from wheat germ, a single dose of five milligrams—one-fifth of a drop either with the food or administered hypodermically, sufficing to restore fertility —(Popular Science Siftings).

It must be noted that prolonged cooking, canning or drying destroys ths vitamins even though all the rest of the nutrition of the foods remains. Moderate cooking does not kill all of them, though it weakens their action. Vegetables are best cooked with a little moisture and fat. A large number of common ailments can be cured by improved methods of cooking and dieting, and a higher standard of public health and general fitness can be secured.

Vitamins &c., in fruits and dietetic articles.

	'A'	'B'	'C'	Iodine content per kilogramme.
Almonds	°1	1	L	...
Apples	1	1	1	...
Bananas	1D.	1 D.	1	0.31
Barley (whole) ...	1	2	N	...
Beans Green ...	...	...	...	0·32
,, , Dried ...	...	1	...	...
,, , Kidney ...	L	3	L	...
,, , Navy ...	L	3	N	...
,, , String (Fresh) ...	2	2	2	...
Beef	3	...	...	...
Beef, Fat	3	N	N	...
Blackberries ...	...	...	2	...
Brains	1	2	1D.	...

* 1—Contains the Vitamin. 2—Good source of the Vitamin. 3—Excellent source of the Vitamin. N—No appreciable amount of the Vitamin. D—Doubt as to presence or relative amount, L—Evidence lacking or insufficient. V—Variable.

		'A'	'B'	'C'	Iodine content per kilogramme.
Bread, brown	...	2	2	...	...
" , white (water)	...	D	1	N	...
" , white (milk)	...	1	1	D	...
" , whole meal	...	...	2	...	...
" , whole wheat (water)		1	2	D	...
" , " (milk)		2	2	D	...
Brinjal	...	...	2	...	...
Butter	...	3	2	N	...
Butter-milk	...	1	2	1 V	...
Cabbage, Fresh Raw	...	2	3	3	0·21
" , Cooked	...	1	2	2	...
Carrots, Fresh Raw	...	2	2	2	...
" , Cooked	...	2	1	1	...
Cauliflower	...	1	2	1	...
Celery	...	L	1	3	...
Chapatee	...	...	2	...	...
Cheese	...	2	L	L	...
" , cottage	...	1	L	L	...
Cocoanut	...	1	2	L	...
Codliver oil	...	3	...	...	...
Coffee	has vitamins in a small amount.				
Corn, cobs	...	...	2	...	...
" , yellow	...	1	2	N	...
Crab	...	...	...	...	1·82
Cream	...	3	2	1 V.	...
Cucumber	...	L	1	L	...
Dandelion Greens	...	2	2	1	...
Dhal	...	...	2	...	...
Egg plant, dried	...	L	2	L	...

		'A'	'B'	'C'	Iodine content per kilogramme.
Eggs	...	2	1	1 D.	...
Fat	...	3	...	...	...
Fish Fat	...	1	1	L	...
Fish (fresh) for *e.g.*, Hilsa		2	...	...	...
Fish Lean	...	N	1	L	...
Fish Roe	...	2	2	1 D	...
Fruits, fresh	...	...	2	...	...
Garlic	..	...	...	...	0·21
Grape, fruit	...	L	2	2	0·020
,, , juice	...	L	1	1	...
Heart	...	2	2	...	...
Herring	...	1	...	...	...
Hickory Nuts	...	L	2	L	...
Kidney	...	2	2	1 D	...
Ladies' Fingers	...	...	2	...	...
Lemon juice	...	L	2	3	...
Lettuce leaves	...	2	2	3	...
Liver	...	2	2	1	...
Lobster	...	...	...	...	1·78
Mackerel	...	1	...	...	...
Maize	...	...	2	...	...
Marmite (East Extract)	.	...	2	...	...
Meat, Lean	...	N to 1	1 D	1 D	...
,, , underdone	...	2	...	...	...
Milk, condensed	...	3	2	1 V	...
,, , dried (whole)	...	3	2	1 V	...
,, , fresh	...	3	2	1 V	...
,, , skimmed	...	1	2	1 V	...
Mother's milk	...	3	...	...	...

	'A'	'B'	'C'	Iodine content per kilogramme.
Mushroom ...	...	...	...	0·17
Mutton Fat ...	2	N	N	...
Nuts ...	...	2	...	...
Oatmeal ...	...	1	...	0·009
Oats ...	1	2	N	...
Oleomargarine ...	1	N	N	...
Onions ...	L	2	3	...
Orange juice ...	1	2	3	...
Oysters ...	2	...	...	...
Parsnip ...	N D	2	L	...
Peanut or Arachis oil ...	3	...	...	...
Peanuts ...	3	2	L	...
Pear ...	...	...	...	0·017
Peas ...	2	2	1 D	...
,, , dried ...	2	3	...	...
,, , green ...	...	...	...	0·80
Pecans ...	L	1	L	...
Pig kidney Fat ...	2	N	N	...
Porridge ...	...	2	...	...
Potato ...	...	1	...	0·010
Potatoes (Boiled 15 min).	L	2	2	...
,, (Boiled 1 hour).	L	2	1 D	...
,, (Baked) ...	L	2	1	...
Prunes ...	L	1	N D	...
Radish ...	L	1	3	...
Raspberries (fresh or canned)	L	L	3	...
Rice (unmillad or unpolished).	D	D	D	0·17

	'A'	'B'	'C'	Iodine content per kilogramme.
Rutabaga ...	N D	2	3 D	...
Salads ...	...	...	3	...
Shrimps ...	2	...	...	...
,, Grey ...	...	...	...	5·91
Sorrel ...	...	...	...	0·12
Spinach, cooked ..	...	...	2	...
,, dried ...	3	2	L	...
,, fresh ...	3	3	3	...
Squash, Hubbard ...	2	L	L	...
Sweet breads ...	1	1	L	...
Sweet Potatoes ...	2	1	L	...
Tea leaves ... contain vitamins in moderation.				
Tomatoes (Raw or canned)	2	3	3	0·23
Turnips ...	N D	2	3	...
,, cooked ...	...	...	2	...
Vegetables, green ...	2	...	...	...
,, green, cooked	...	...	2	...
,, green & raw.	...	1	3	...
Walnuts ...	L	2	L	...
Watercress ...	...	...	2	...
Wheat flour, whole ...	1	2	...	0 007
Yeast ...	...	3	...	...
Yolk of Eggs ...	3	2	...	...

APPENDIX VI.

Principal Forms of Ayurvedic Medication and Methods of their Preparation.

Asava & Arista are medicated spirituous liquors. These are prepared with honey and treacle and various medicinal substances, such as roots, leaves, barks etc of plants cut into pieces and steeped in water and laid aside in air-tight earthen jars for vinous fermentation for at least six months. The proportion of the different ingredients, is generally as follows :—Water 32 seers, treacle 12½ seers and honey 6¼ seers, medicinal substances 1¼ seers, in powder or decoction. When raw vegetables are used for fermentation, the resulting fluid is called *Asava*. When the decoction of drugs only is added, the fermented liquor is called *Arishta*. These preparations combine the properties of spirituous drinks and those of the drugs used in preparing them.

Avaleha is linctus or extract. To prepare it, decoction, after being strained, is again boiled down to the consistence of a thick extract. This extract, when properly made, does not readily dissolve in water, can be drawn out into wires, and will receive impressions of coins on its surface. Extracts are administered with the addition of sugar, decoctions or powders.

Arkas are made by soaking drugs in water for 24 to 48 hours and then extracting their essence by distillation; the essence thus obtained is *Arka*.

Bhasmas—These are called alkaline ashes and are prepared from vegetable and mineral substances. Vegetable ashes :—*In* the case of Vegetable, the drugs con-

taining more or less alkalies are at first made into a coarse powder or pieces, and then burnt till they are completely reduced to ashes. Mineral ashes:—In preparing these, metals are first subjected to a process of purification. The purified mass is then oxidised. The oxidised product is then subjected to a process of roasting. Finally, the roasted mass is reduced to a fine powder, when it is fit for use. Ashes are also prepared from various animal products, such as hart's horn, pearls, cowries etc.

Churna is powder prepared by pounding dry mineral, animal or vegetable substances in a mortar with a pestle and passing the powder through cloth, or fine sieve. Usually powders are taken with milk or water ; sometimes with ghee, honey or sugar, their proportion is just sufficient to mix the dose.

Dhuni or fumigations are local applications consisting of various incenses and of pungent vegetable, animal, or mineral substances They are capable of being volatilised by heat, and the vapour which escapes, may be directed towards a limited part, such as the head, face or anus, or widely diffused over the skin of the whole body.

Dhupana is a process used for patients; it is as follows ;—The patient is made to lie on his back in a sleeping posture, in a cane chair, or on a couch, all his clothes having been previously removed. He is then covered over with a blanket. Incenses or other drugs (enumerated above) are sprinkled over burning coals kept in an iron or copper plate. The fire (with burning drugs) is put under the chair or couch, and the fumes directed to the naked body.

Dravaka or distilled mineral acids—Several formulae

are given in different works for their preparation. A number of mineral substances or salts are heated in a retort and the distilled fluid collected in a glass receiver. The acids are tested by their property of dissolving a *cowrie* or shell thrown into them.

Ghritapaka is a preparation of medicated *ghrita.* The *ghrita* or clarified butter is first of all heated on a fire so as to deprive it of any water that may be mixed with it. A little turmeric juice is then added to purify it. *Ghrita* thus purified is placed on a fire in an earthen, copper, or iron pan and melted with a gentle heat. Then the medicinal paste and fluids to be used are added, and the whole boiled together till the watery parts are all evaporated and the *ghrita* is free from froth. It is then strained through cloth and preserved for use. *Ghrita* thus prepared should be imbued with the colour, taste and odour of the medicines with which it has been boiled. The preparation of *ghrita* by boiling is not completed in one day; the medicines are allowed to remain in contact with the butter for some time, so that their active principles may be thoroughly extracted. The usual proportion of the ingredients is this:—Vegetable drugs in paste, is 1 part to 4 parts of clarified butter and 16 parts of water. When liquids thicker than water, such as decoctions or expressed juices are used, the proportion of the solids or the paste is $\frac{1}{6}$ or even $\frac{1}{8}$ of the clarified butter. The boiling process is carried on to three degrees called respectively, *mridu* or mild, *madhyama* or intermediate, and *khara* meaning hard or overdone. In the first, the boiled paste is soft; in the second, it is just soft enough to be made into pills with the fingers. In the third form,

it is turned hard and dry. The intermediate form is preferred for internal administration and injection into the rectum, while the over-boiled form is used for external application. The under-boiled form is said to be suitable for use as errhines.

Gudika are large pills or boluses prepared like *Vatika*.—See *Vatika*.

Kalka is paste prepared by grinding dry or fresh vegetable substances on a flat stone or slab with a muller into thin paste, with the addition of water when necessary.

Kanjika is a sour liquid produced from the acetous fermenation of powdered paddy and other grains. Two seers of powdered paddy (grown in rainy season) are steeped in 8 seers of water and laid aside in a covered earthen pot for 15 days and upwards, so that it may undergo acetous fermentation. The resulting fluid is called *Kanjika* or *Dhanyamla*, that is, the acid produced from paddy. *Kanjika* is a clear transparent fluid with an acid taste and vinous smell. It is cooling, refrigerant, and useful as a drink in fever, burning of the body etc. Other grains besides paddy are sometimes used for acetous fermentation. If mustard or the seeds of Raphanus sativus are used instead of paddy, the resulting fluid is called *Sintaki*. If the husked grains of barley are boiled and steeped in water, the resulting acid liquor is called *Sauvira*. When the husks of fried seeds of Phaseolus roxburghii and barley are boiled together for acetous fermentation, the acid is called *Tushamvu*. *Arnala* is a sour gruel made from fermentation of boiled rice.

Khandapaka means confections. These are made by

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adding to syrup medicines in fine powder and stirring them over a slow fire till intimately mixed and reduced to proper consistence, *i. e.*, that of an extract. Honey is usually subsequently added to confections.

Kshirapaka is decoction in milk. One part of medicine is boiled in eight of milk and thirty-two of water, till the water is evaporated and the milk alone remains; the decoction is then strained.

Kvatha or decoctions are generally prepared by boiling 1 part of vegetable substances previously pounded or cut into small pieces over a slow fire with 16 parts of water, till the whole is reduced to one-fourth. The decoction is then strained through cloth. When decoctions are prepared with dry substances, 8 parts of water are used. Decoctions are administered with the addition of salt, honey, sugar, treacle, alkalies, ghee, oil, or some medicinal powders. Every day the decoction should be prepared fresh for administration; it should under no circumstances be kept overnight.

Lepas are plasters prepared by mixing various resinous substances together. The mode of application varies. Some put resinous substances into any hot spirit, till a kind of paste is formed. When cold, it is applied to the affected part, which is then covered with cotton and the *Lep* is allowed to remain over the skin for 4, 5, or 7 days. Some *Lepas* are prepared by mixing powders with water, lemon juice, ghee or egg and applied to the parts affected. Another mode of application is to mix a drug or drugs in hot or cold water, and spread it on a piece of brown paper. Thus mustard powder made into a paste with water and spread over a piece of paper or muslin, is

known as mustard plaster or *lep*.

Modaka are boluses prepared by adding powders of medicinal substances to cold syrup and stirring them together till uniformly mixed. No boiling is required in this preparation.

Pakas are soft preparations of drugs made into a paste with sugar or honey to give them an agreeable taste as well as to preserve them. The thin paste is also called *Avaleha* and the semi-solid mass is called *Paka*.

Paniya is a weak form of decoction prepared by boiling 1 part of medicinal substances in 32 of water till the latter is reduced to one-half. This preparation is usually taken *ad libitum* for appeasing thirst or some such object.

Phanta is infusion prepared by steeping 1 part of powdered herb in 8 parts of hot water for 12 hours or till it becomes cold. They are administered in the same way as decoctions.

Putapaka means roasting. In this process vegetable drugs are reduced to a paste which is wrapped up in leaves of either Eugenia jambolana or Ficus Bengalensis firmly tied with string or fibres of some sort, covered with a layer of clay from half to one inch in thickness and roasted in a fire made of dried cowdung. When the layer of clay assumes a brick-red colour on the surface, the ball should be withdrawn from the fire and broken, and the juice of the roasted drug expressed. This juice is administered, with the addition of honey, sugar or such other adjuncts as may be directed. Sometimes the roasted drug itself is given in the form of a powder or pills.

Rasas are preparations containing mercury in any form. As most of these preparations contain various kinds of poisons, they are made into pills and tablets so as to fix the proportion of dose. *Rasas* are generally taken with *Kvath*, milk or water, sometimes honey, ghee or both are used as *anupans*.

Seka or fomentations, are direct applications either of dry heat or hot medicated steam. Dry heat may be applied with a piece of flannel heated over a fire, or by a calico containing heated salts and brick, tile, or hot ashes prepared from various vegetables. A bag made of thin flannel and filled with hot bran, *Ajamoda*, Cannabis sativa, or Anthemis nobilis flowers, is often used for this purpose. Hot medicated steam.—Flannel, wrung out of boiling water, to which poppy heads are added, is a common mode of using moist fomentation. The skin should be carefully dried after their use, and a dry flannel should replace them. Varalians is a common term among Indians for applying heat to painful parts.

Sitakashaya is cold infusion prepared by steeping 1 part of the powdered drug in 6 of cold water for the night and straining the fluid in the morning.

Svarasa is expressed juice prepared by pounding fresh vegetables in a mortar and expressed and strained through cloth.

Tailapaka are medicated oils. In preparing these, sesamum oil is used unless otherwise specified. Sesamum oil, before being boiled with medicinal substances is first of all heated to deprive it of any water by evaporating. It is then purified by steeping in it the following substances for 24 hours, *viz.*, madder 1/16 part in weight

of the oil, turmeric, wood of Symplocos racemosa, tubers of Cyperus rotundus, a bark called *nalika*, the three myrobalans, root of Pavonia odorata and the tender shoots of Pandanus odoratissimus, each one sixty-fourth part in weight of the oil. These ingredients in fine powder should be soaked in the oil, with the addition of an equal quantity of water for a day. The mixture should then be boiled till the water is evaporated, and finally strained through clean cloth. To the oil thus prepared medicinal substances, in the form of paste, decoction etc., are added in the same proportions as for the preparation of *ghritapaka*. They are then boiled together till the watery parts are all evaporated. As in the case of *ghrita* the vessel should be one of earth or copper or iron. When cool, the oil is strained through cloth so as to separate the solid particles. Some medicinal oils, and especially those used in the treatment of nervous diseases, rheumatism etc., are subjected to a third process of boiling with various aromatic and fragrant substances. This is called the *Gandha paka* or boiling for rendering the oil fragrant. For 4 seers of oil, one tola of each of such fragrant ingredient should be taken, excepting camphor which should be 4 tolas. These ingredients, with the exceptions noticed below, are reduced to a paste with water and added to the oil, which is then boiled with an equal quantity of water till the latter is evaporated and lastly strained. Camphor, musk, storax and the substance called *nakhi* should be added after the process of boiling is finished and the oil is strained. Oils for rheumatism and nervous diseases, are sometimes rendered fragrant by the addition of camphor alone.

Castor oil and mustard oil are sometimes used in the preparation of medicated oils. The proportions of oil, medicinal substances and fluids are the same as with sesamum oil, but the methods of purifying them are different. Mustard oil is purified by being boiled with the following ingredients, *viz.*, emblic myrobalan, turmeric, tubers of Cyperus rotundus, root-bark of Aegle marmelos, pomegranate bark, flowers of Mesua ferrea, Nigella seeds, root of Pavonia odorata, the bark called *nalika*, and belleric myrobalan, two tolas each and madder 16 tolas, for 4 seers of oil. These should be boiled together with 16 seers of water, till the latter is all evaporated, and the oil should then be strained. It is now fit for being boiled with medicinal substances, the process for which is the same as for sesamum oil above described.

For purifying castor oil, the following ingredients are used, *viz.*, madder, tubers of Cyperus rotundus, coriander, the three myrobalans, leaves of Sesbania aculeata, Pavonia odorata, wild dates, tender red buds of Ficus Bengalensis, turmeric, wood of Berberis Asiatica, the bark called *nalika*, ginger and the shoots of Pandanus odoratissimus, each half a tola for 4 seers of oil. Castor oil should be boiled with equal parts of whey and *kanjika* (fermented paddy water) along with the above ingredients.

Vatika are pills usually prepared by reducing a decoction of vegetable substances to a thick consistence and then adding some powders or drugs or articles such as treacle, honey, gum etc., for making a pill mass. Water is usually the only *anupan* for administering pills, where none else is mentioned. See also *Gudika*.

APPENDIX VII.

Therapeutic Agents, with their Definitions.

Abortifacient—Inducing expulsion of the fœtus.

Abortive—(*Pataneeya*) —See Abortifacient.

Acrid—Producing irritation, as of the tongue &c.

Adipogenous—An agent that produces fat.

Alexipharmic—A medicine neutralising a poison.

Alkali—An antacid.

Alterative—(*Parivartaka*)—A medicine that alters the morbid processes of nutrition and excretion, restoring in some unknown way, the normal functions of an organ or of the system without producing any obvious impression on any of the organs of the body.

Anaesthetic—(*Angamardashamana*)—A substance that produces loss of sensation and consciousness from its effects upon the brain and spinal centres.

Analeptic—Any agent restoring strength after illness, as nourishing foods and tonics.

Analgesic—(*Vadanashamana*)—A remedy that relieves pain either by depressant action on the nerve centres or by impairing the conductivity of nerve fibres.

Anaphrodisiac—(*Viryanashana*)—That which allays the sexual desire.

Anhidrotic (*Svedaghna*)—An agent that checks sweating.

Anodyne (*Sulaprasamana*)—That which gives relief from pain.

Antacid (*Pittaghna*)—An alkali; a substance counteracting or neutralizing acidity.

Castor oil and mustard oil are sometimes used in the preparation of medicated oils. The proportions of oil, medicinal substances and fluids are the same as with sesamum oil, but the methods of purifying them are different. Mustard oil is purified by being boiled with the following ingredients, *viz.*, emblic myrobalan, turmeric, tubers of Cyperus rotundus, root-bark of Aegle marmelos, pomegranate bark, flowers of Mesua ferrea, Nigella seeds, root of Pavonia odorata, the bark called *nalika*, and belleric myrobalan, two tolas each and madder 16 tolas, for 4 seers of oil. These should be boiled together with 16 seers of water, till the latter is all evaporated, and the oil should then be strained. It is now fit for being boiled with medicinal substances, the process for which is the same as for sesamum oil above described.

For purifying castor oil, the following ingredients are used, *viz.*, madder, tubers of Cyperus rotundus, coriander, the three myrobalans, leaves of Sesbania aculeata, Pavonia odorata, wild dates, tender red buds of Ficus Bengalensis, turmeric, wood of Berberis Asiatica, the bark called *nalika*, ginger and the shoots of Pandanus odoratissimus, each half a tola for 4 seers of oil. Castor oil should be boiled with equal parts of whey and *kanjika* (fermented paddy water) along with the above ingredients.

Vatika are pills usually prepared by reducing a decoction of vegetable substances to a thick consistence and then adding some powders or drugs or articles such as treacle, honey, gum etc., for making a pill mass. Water is usually the only *anupan* for administering pills, where none else is mentioned. See also *Gudika*.

APPENDIX VII.

Therapeutic Agents, with their Definitions.

Abortifacient—Inducing expulsion of the fœtus.

Abortive—(*Pataneeya*) —See Abortifacient.

Acrid—Producing irritation, as of the tongue &c.

Adipogenous—An agent that produces fat.

Alexipharmic—A medicine neutralising a poison.

Alkali—An antacid.

Alterative—(*Parivartaka*)—A medicine that alters the morbid processes of nutrition and excretion, restoring in some unknown way, the normal functions of an organ or of the system without producing any obvious impression on any of the organs of the body.

Anaesthetic—(*Angamardashamana*)—A substance that produces loss of sensation and consciousness from its effects upon the brain and spinal centres.

Analeptic—Any agent restoring strength after illness, as nourishing foods and tonics.

Analgesic—(*Vadanashamana*)—A remedy that relieves pain either by depressant action on the nerve centres or by impairing the conductivity of nerve fibres.

Anaphrodisiac—(*Viryanashana*)—That which allays the sexual desire.

Anhidrotic (*Svedaghna*)—An agent that checks sweating.

Anodyne (*Sulaprasamana*)—That which gives relief from pain.

Antacid (*Pittaghna*)—An alkali; a substance counteracting or neutralizing acidity.

Antaphrodisiac—An agent that lessens the venereal impulse.

Antemetic—See Antiemetic.

Anthelmintic (*Krimighna*)—An agent which either kills or renders powerless and expels intestinal parasites or worms.

Antiarthritic—A remedy against gout.

Antidote (*Vishaghna*)—Counteracting the action of a poison.

Anti-emetic (*Chherdinashana*)—Relieving nausea and preventing emesis.

Antifebrile—An agent reducing a fever.

Antifermentative—An agent that prevents fermentation.

Antigalactic or Antigalactagogue—A drug that lessens the secretion of milk.

Antihidrotic—Lessening the secretion of sweat.

Antilithic (*Mutrasangrahaniya*)—An agent preventing the deposit of urinary calculi or sediment.

Antineuralgic—Overcoming neuralgia.

Antiparasitic—Destroying or preventing increase of parasites.

Antiperiodic (*Jvarahara*)—A remedy which antagonises the poison of periodic disorders like ague, neuralgia etc.

Antipharmic—See Alexipharmic.

Antiphlogistic—An agent reducing inflammations.

Antipruritic (*Kandughna*)—Relieving the sensation of itching.

Antipyic means checking or restraining suppuration.

Antipyretic (*Jvarabhanjeeya*)—Reducing the temperature of fever.

Antirheumatic—An agent relieving or curing rheumatism.

Antiscorbutic—A remedy for or preventive of scurvy.

Antiseptic (*Shodhaneeya*)—A remedy that prevents or destroys putrefaction or, what is the same thing, the bacteria upon which putrefaction depends.

Antisialic or *Antisialagogue*—Checking the secretion of saliva.

Antispasmodic (*Svasahara*)—An agent allaying or relieving convulsions or spasmodic pains.

Antizymotic—An agent preventing the process of fermentation; an antiferment.

Aperient (*Bhedaneeya*)—A mild purgative or laxative.

Aphrodisiac (*Vajeekarana*)—Stimulating the sexual passion.

Aromatic (*Sugandhitadravya*)—A substance characterized by a fragrant, spicy taste and odour, and a stimulant to the gastro-intestinal mucous membrane.

Astringent (*Sankeshaneeya*)—An agent producing contraction of organic tissues or arresting haemorrhages, etc.

Attenuant—An agent increasing the fluidity or thinness of the blood or other secretion.

Bactericide—An agent that destroys bacteria.

Cardiac—Pertaining to the heart.

Cardiant—A remedy that affects the heart.

Carminative (*Deepaneeya*)—A calming or soothing

medicine, that acts by relieving pain from flatulence.

Cathartic (*Bhedana*)—Producing evacuations from the bowels.

Caustic (*Kustagna*)—A substance that destroys or disorganizes living tissue.

Cautery—Primarily, the term was applied to caustics, but more frequently now to the platinum-wire heated by an electric current or the hot iron, for counter-irritation, removal of tissue etc.

Cholagogue (*Mridubhedana*)—A remedy promoting the secretion or excretion of bile.

Cordial—Pertaining to heart; exhilarant or stimulant.

Corrosive—A substance that destroys organic tissue either by direct chemic means or by causing inflammation and suppuration.

Counter-irritant—An agent that produces superficial and artificial inflammation, in order to exercise a good effect upon some adjacent or deep-seated morbid process.

Deliriant—An agent that acts on the brain, so as to disorder the mental faculties and produce confusion of will-power.

Demulcent (*Mridukara*)—Soothing or protecting mucous membranes.

Deobstruent—A medicine that removes functional obstructions of the body.

Deodorant (*Durgandhanashaka*)—That which destroys, removes or corrects offensive odours.

Depilatory—A substance used to destroy the hair.

Depressant—A medicine that retards or depresses

the physiologic action of an organ.

Depurant or Depurative—A medicine that purifies or cleanses the animal economy.

Derivative—Diverting or drawing a morbid process from its seat.

Desiccant (*Vranaropaneeya*)—A drying medicine or application.

Detergent—A drug purifying, cleansing wounds, etc.

Diaphoretic (*Svedaneeya*)—Causing an increase of perspiration.

Digestive—An agent that promotes digestion.

Diluent—An agent that dilutes the secretions of an organ or that increases the fluidity of secretions.

Discutient—A medicine supposed to have the power of scattering a swelling.

Disinfectant (*Aaguntakaroganashaka*)—An agent that destroys disease germs and noxious properties of fermentation and putrefaction.

Diuretic (*Mutravirochaneeya*)—A medicine that increases the flow or secretion of urine.

Drastic—A powerful and irritating purgative.

Ecbolic (*Garbhasayashodhana*)—That which produces abortion or facilitates parturition.

Emetic (*Vamakareeya*)—An agent which induces vomiting.

Emmenagogue (*Rajathhapaneeya*)—That which stimulates the menstrual flow.

Emollient (*Snehopaga*)—A substance which by external application softens the skin or internally soothes an irritated or inflamed surface.

Epispastic—(*Doshaghnalepa*)—A vesicatory or substance producing a blister.

Errhine (*Shirovirochaneeya*)—A medicine that, applied to the mucous membrane of the nose, increases nasal secretion.

Escharotic (*Chhadaneeya*)—A Substance that, applied to the skin, produces an ulcer.

Excitant—A remedy that stimulates the activity of an organ.

Exhilarant—An agent to enliven and cheer the mind.

Expectorant (*Shvasakhasahara*)—A remedy that promotes expectoration.

Febrifuge (*Jvarankusa*)—An agent that lessens fever.

Galactafuge—See Lactifuge.

Galactagogue or Lactagogue (*Stanyajanana*)—An agent that increases the secretion of milk in the breast.

Germicide—That which destroys worms; a microbicide.

Germifuge—An agent that expels germs.

Haematinic or Hematic (*Raktashodhaka*)—A blood tonic.

Haemostatic (*Shonitasthapana; Raktapittahara*)—An agent that arrests or restrains bleeding.

Hydrogogue—A medicine which causes free secretion from the intestinal glands and removes much serum from the blood-vessels, producing fluid of watery motions.

Hypnotic (*Nidrakari*)—A remedy that causes sleep.

Insecticide—A substance destructive to insects.

Irritant—That which induces irritation or inflammation.

Lactagogue—See 'Galactagogue'; Lactiferous.

Lactifuge—That which lessens the secretion of milk.

Laxative (*Svalpabhedana*)—An agent that loosens the bowels; mild purgative.

Lithonlytic—See Lithontriptic.

Lithontriptic—A medicine supposed to possess the power of dissolving various concretions in the body, as the acids for phosphatic and the alkalies for uric acid calculi.

Masticatory—An agent which when chewed increases the flow of saliva.

Mydriatic (*Netravisteenayoga*)—A medicine that causes dilatation of the pupil.

Myotic (*Netrakashitayoga*)—Causing contraction of the pupil.

Narcotic (*Nidrakari*)—A drug that produces narcosis or stupour.

Nauseant—Any agent that produces nausea.

Nervine—A remedy that calms nervous excitement or acts favourably on nervous diseases.

Nutritive or Nutrient—Nourishing.

Oxytocic—A drug that hastens child-birth by stimulating uterine contraction.

Parasiticide (*Krimighna*)—Destructive of parasites.

Pectoral (*Kasahara*)—A medicine useful in diseases of the respiratory tract.

Purgative (*Virechaneeya*)—A medicine producing copious evacuations of the bowels.

Pustulant (*Mahalepa*)—An irritant substance which does not affect the whole skin alike, but especially irritates isolated portions and gives rise to the formation of pustules.

Refrigerant (*Dahanashaka*)—A medicine having cooling properties or lowering bodily temperature.

Resolvent—That which causes the absorption of inflammatory or other swellings.

Restorative—A medicine, cordial, or food that is efficacious in restoring one to health and vigour.

Revulsive—An agent designed to withdraw the blood from or counteract the tendencies toward a morbid focus or process.

Rubefacient (*Bareeyalepana*)—A remedy that, by irritation of the ends of the nerves of the skin, causes distention of the capillaries and reddening of the skin.

Sedative (*Shulahara*)—An agent that exerts a soothing effect by lowering functional activity.

Sialagogue (*Lalavardhaka*)—Producing a flow of saliva.

Soporific—An agent that induces sleep.

Sorbefacient—An agent that induces absorption.

Spasmodic—Pertaining to convulsion or spasm.

Sturnutatory (*Chhikkakari*)—A drug or compound that causes sneezing.—See 'Errhine'.

Stimulant (*Agnisthapaneeya*)—An agent exciting the functions of an organ or some process of the economy.

Stomachic (*Kshudhavardhaneeya*)—A stimulant exciting the functional activity of the stomach.

Styptic (*Raktasthambana*)—A medicine that causes

vascular contraction of the blood-vessels and checks hæmorrhage.

Sudorific (*Ugrasvedaneeya*)—Inducing profuse sweating.

Vermicide—That which *kills* intestinal worms.

Vermifuge—That which *expels* intestinal worms.

Vesicant or Vesicatory (*Teeksnalepana*)---A blistering agent or application.

Vulnerary.—A remedy useful in healing wounds.

APPENDIX VIII.

IMPORTANT GENUSES or NATURAL ORDERS, their English equivalents, distinguishing characters & typical examples.

Acanthaceae—The Adusa Order (Acanthads).—*Hb.* or *Sh*; *L.*—Opposite, simple, exstipulate. *Fl.*—irregular, bracteated; *Cx.*—4 to 5 partite; *S.*—4 or 5, much imbricated; inflorescence, terminal; *Cl.*—2-lipped *St.*—2 or 4, didinamous, axillary or in spikes; *O.*—in a disk, 2-celled; *Fr.* capsular and 1 or 2-celled; *Sd.*—one or more, suspended by hard, cup-shaped or hooked projections; no *Al*; *Ctd.*—large and fleshy *Rle.*—inferior. *T. E.*—Acanthus species; Adhatoda vasika.

Algae—The Chinai-ghas Order (Seaweeds):—The *Ws.* are cellular. Like the lichens these are flowerless parenchymatous plants, nourished through their whole surface. They grow in fresh or salt water or in moist places. The thalus has neither true woody fibre nor vessels. It is foliaceous, branched, filamentous or pul-

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* The significance of abbreviations used in this Appendix :—*Al*—Albumen; *An*—Anthers; *Cx*—Calyx; *C*—Carpels; *Cl*—Corolla; *Ctd*—Cotyledons; *Em*—Embryo; *Fl*—Flowers; *Fr*—Fruits; *Gl*—Glands; *Hb*—Herbs; *L*—Leaves; *O*—Ovary; *Pd*—Peduncles; *P*—Petals; *Pt*—Petioles; *Pis*—Pistil; *Pl*—Placenta. *Pts*—Plants; *Rle*—Radicle; *R*—Roots; *Sd*—Seeds; *S*—Sepals; *Sh*—Shrubs; *St*—Stamens; *Sm*—Stems; *Sa*—Stigma; *Sp*—Stipules; *Ta*—Testa; *Th*—Thallus; *Tr*—Trees; *Ws*—Weeds; *T.E.*—Typical Examples.

verulent. Many algae are microscopic, others ar large size, usually greenish-brown or rose-coloured. *T. E.*—Gracilaria lichenoides.

Amaranthaceae—The Cholai bhaji or Aghada Order (Amaranths):—*Hb.* or *Sh*; *Sm.*—striated, green or red coloured; *L.*—entire, wrinkled, simple, exstipulate, opposite, or alternate, generally oval, oblong, rhomboid shaped, and green or variously coloured; *Fl.*—small, spiked, panicled, crowded or capitated, bracteated, occasionally unisexual, often having distinct sexes, *Cx.*—3-5; *St.*—5, hypogynous, *O.*—free, 1-celled; *Fr.*—an utricle, caryopsis or berry; *Sd.*—one or more, black, pendulous, and affixed to a central receptacle: *Al.*—mealy. *T. E.*—Achyranthes aspera.

Amaryllidaceae—The Sukadarsan Order (Amaryllids).—*Pts.*—bulbous or fibrous rooted without any aerial *Sm*; L.—with parallel and straight venation, linear ensiform; *Fl.*—on scapes and spathaceous; *Fr.*—capsular, 3-celled, 3-valved, dehiscent or berry; *Sd.*—numerous; *Al.*—fleshy or horny: *Em.*—with a radicle next to hilum. *T. E.*—Agave americana; Crinum asiaticum or C. deflexum.

Ampelideae—The Draksha Order (Vines).—Climbing *Sh.*—juice watery: joints swollen and separate from each other; L.—simple or compound, alternate above and opposite below; *Fl.* regular, green, small and stalked; *Fr.* succulent, 2-celled; *Sd.* erect, few, 2 in each cell; *Ta.* bony; *Al.* hard. *T. E.*—*Cissus* quadrangularis and adanata; Vitis vinifera.

Anacardiaceae.—The Bhilamo or Kaju Order (Anacards, Terebinths or Sumacs) :—

Tr. or *Sh.*—abounding in resinous, gummy, acrid, milky and sometimes poisonous juice, which becomes black on drying ; *L.*—alternate, exstipulate, and dotless ; *Fl.*—regular, often small and unisexual; *Fr.*—indehiscent, drupe or nut-like ; *Sd.*—edible, without *Al. T. E*:—Mangifera indica.

Apocynaceae.—The Satavari Order (Dogbanes) :—*Tr.*—or twining *Hb*, or *Sh.*—usually with acrid milky juice; *L.*—entire, exstipulate, commonly opposite, sometimes whorled or scattered, generally smooth and with parallel veins ; *Fl.*—of rose white or yellow colour ; *Cx*. 5 partite; *Cl.*—5 lobed ;O. 2-celled; style 2, *Sa*. 1 resembling in shape an hour glass or dumb bell ; Ovules numerous ; *Fr.*—1 or 2 follicles a capsule, drupe or berry ; *Sd.* albuminous. *T.E*:—Carissa species.

Araceae.—The Madanmasta, or Surana Order (Arads or Arums) :—*Hb.* or *Sh*, with an acrid juice and subterranean tubers, corms, or rhizomes ; *L.*—sheathing, usually net veined, simple or rarely compound ; *Fl.*—monoecious, small, either males or females, and arranged on a spadix or within a spathe; perianth none; *St.* few or numerous ; *An.* upon very short filaments; *O.*—1-3 celled ; *Fr.*—succulent ; *Sd.*—pulpy ; *Al.*—mealy or fleshy ; rarely exalbuminous. *T. E* :—Amorphophallus campanulatus etc.

Aristolochiae—The Sapasana or Kidamara Order (Birthworts) :—*Hb.* or shrubby climbers. Wood of the stem arranged in separate wedges ; *L.* alternate, cordate or entire and of a brown or greenish colour ; *Fl.*—axillary, perfect, dull coloured ; *Cx.*—tubular, superior ; *Fr.* 3 to 6 celled, capsular or succulent ; *Sd.* numerous and albuminous. *T. E* :—Aristolochia bracteata.

Aroideae.—See "Araceæ."

Asclepiadaceae or Asclepiadeæ—The Upalasari Order (Milkweeds):—*Sh.* or *hb.* generally milky, succulent and frequently of a twining habit; *L.* opposite, entire and exstipulate; *Fl.*—regular, pink, greenish yellow, white or purple; *Cx.* and *Cl*—5 partite; *St.*—5, alternate with the lobes of the *Cl*; *Fr.*—with two follicles, running when ripe at an acute angle, and thus resembling the two horns of a calf; *Sd.* woody and frequently comose with thin *Al.* Other characters and properties are allied very nearly to those of Apocynaceae. *T. E*:—Calotropis gigenta; Daemia extensa; Hemidesmus indicus.

Asteraceae—See "Compositae"

Aurantaceae—The Limbu Order (Citronworts):—*Tr.* or *Sh.* *L.* alternate, exstipulate, dotted and with the blade articulated to the winged *pt*; *Fl.* regular, fragrant; *Cx* short, urn-shaped, 3 to 5 toothed; *P.* or *S.* equal in number; *St.* equal or some multiple of them; disk hypogynous and annular; *Fr.*—indehiscent; *Sd.* solitary or numerous, ex-albuminous; *Ctd.* thick and fleshy. *T.E.*—Citrus aurantium & bergamia.

Berberidaceae or Berberideae—The Daruhalada Order (Burberry family):—*Sh.* or *hb*; *L.*—alternate, compound, usually exstipulate; *Sm.* generally free from hairs but often spiny; *St.* hypogynous; equal to *P.* in number; *An.* two-celled, each opening by a value from the bottom to the top, *Fr.* baccate or dry and capsular; *Sd.* with minute *Em.*, *Al.*, fleshy and horny. *T. E.*-Berberis aristata.

Bixaceae or Bixineae—The Kesari or Chaulmogara Order;—*Sh* or small *Tr*; *L.*—alternate, exstipulate, leathery and often dotted; *Fr.*—dehiscent or indehiscent, with a

thin pulp in the centre; pulp differently coloured; *Sd.*—numerous, and often covered with withered pulp; *Al.*—fleshy and oily. *T. E.*—Bixa orellana; Gynocardia odorata.

Boaginaceae or Boragineae—The Gaozabana Order (Borages):—*Hb*, *Sh* or *Tr*,—with more or less rounded *Sm*; *L.*—alternate, entire, or toothed, usually thick and rough, and generally covered on both sides with white glands; *Fl.*—regular and of a red, blue or whitish colour; *Fr.*—2 to 4 seeded. *T. E*:—Heliotropium indicum; Onosma bracteatum; Trichodesma indicum.

Brassicaceae—See "Cruciferae."

Çannabinaceae—The Bhanga or Ganja Order; (Hemp family):—*Hb.*—rough, with watery juice; *L.*—alternate, stipulate and lobed; *Fl.* small, unisexual, dioecious; male *Fl.*—in racemes or panicles; *Cx.*—scally; *St.* 5; female *Fl.*—in spikes or strobiles; *O.* superior, 1-celled; ovule 1, solitary, pendulous; *Fr.*—indehiscent; *Sd.*—solitary, exalbuminous; *Em.*—hooked. T.E.—Cannabis sativa.

Capparidaceae or Capparideae—The Hurahura Order (Capparids):—*Hb*, *sh.*—or rarely *Tr.* *L.*—simple or lobed, alternate, generally exstipulate rarely with stipulate appendages; *Fl.*—yellow, white or purple; *Fr.*—dehiscent and pod-shaped or indehiscent and baccate; *Sd.*—one or many, usually reniform and without al; *Ctd.*—leafy. *T. E.*—Cadaba indica; Gynandropsis pentaphylla.

Cinchonaceae—See "Rubiaceae".

Clusiaceae—See "Guttiferae".

Colchicaceae—The Suranjana Order (Colchicum family):—*Hb.*—with bulbs, corms, tuberous or fibrous

roots; *Fl.*— regular, usually hermaphrodite, rarely unisexual; perianth inferior, white, green or purple and petaloid; *St.* 6; *O.*—superior, 3-celled; *Fr.*—3-celled and 3-valved, septicidal, dehiscent; *Sd.*—with membranous septa; *Em.*—minute, *al.*—fleshy. *T. E*:—Hermodactylus gol.

Combretaceae.—The Himaja Order (Myrobalans):—*Tr.* or *sh*; *L.* exstipulate, entire without dots; *Fl.* perfect or unisexual, beautiful and red, white or greenish yellow. *Fr.* indehiscent and generally winged or obtuse angled, one seeded; *Sd.* exalbuminous. *T. E*:—Terminalia arjuna.

Compositae—The Sevate Order (Composites or Thistle family):—*Sh* or *hb*, rarely *tr*; *L.* opposite, alternate and exstipulate, simple or lobed; *Fl.* variegated, hermaphrodite, unisexual or neuter and arranged in capitula; *Fr.* achene, dry and indehiscent one-celled; *Sd.* solitary, erect and ex-albuminous. *T. E*:—Vernonia anthelmintica and V. cinerea.

Coniferae—The Gandhabiroja or Devadara Order (Conifers or Pine family):—*Tr.* very large, resinous; *Sh.* evergreen; *Sm.* branched and continuous; *L.* linear, needle shaped or lanceolate parallel veined, imbricate, fascicled; *Fl.* unisexual, naked, monoecious; no perianth, male *fl.* in catkins; *St.* 1 or many, monadelphous; *An.* 2 or many celled; female *fl.* in cones; ovules naked, two or more; *fr.* Woody and cone-like; *Sd.* naked with hard custaceous testa, albuminous; *Ctd.* 2 or many. *T. E*:—Pinus deodara and longifera.

Convolvulaceae—The Nishotara Order (Bind weeds or Morning-glory family):—Twining, trailing or milky

hb. or *sh*; *R.* generally containing milky acrid juice; *L.* exstipulate, alternate, simple or lobed, sometimes parasitic; *Fl.* generally large, bell-shaped, and of a beautiful pink purple, blue, red, yellow, or white colour. *Fr.*—often globular, capsule 2 to 4 celled; *Sd.*—generally hairy; *Ctd.*—foliaceous and crumpy. *Al.* small and mucilaginous. *T. E.*—Evolvulus alcinoids; Ipomoea turpethum.

Cruciferae—The Rai Order (Crucifers or Turnip and Cabbage family)—*Hb.* or rarely *Sh*, *L.* alternate and exstipulate. *Fl.* cruciform; *St*—tetradynamous; *Fr*—a siliqua or silicula. *Sd.* many, each seed superior, generally stalked and pendulous. *T. E.*—Brassica juncea; Sinapis juncea.

Cucurbitaceae—The Dodhi Order (Cucurbits or Gourd family).—*Hb.* generally succulent, prostrate or climbing with tendrils. *L.* alternate, more or less lobed and scabrous. *Fl.*—unisexual, monoecious or dioecious; *Cx.* and *Cl.* 5 united, *St.*—3 to 5; O. inferior 1-10 locular. *Fr.*—a pepo or a succulent berry. *Sd.*—numerous, more or less flattened and exalbuminous; *Ta*—horny or leathery. *T. E.*—Coccinia indica; Lagenaria vulgaris.

Cyperaceae—The Nagarmotha Order (Sedges)—Rush-like or grass-like herbs; *Sm.*—solid, without joints or partitions, frequently angular; *L.*—with closed tubular sheaths surrounding the *St.*; *Fl.*—spiked, unisexual, perfect and imbricated; each arising from the axil of 1 to 3 bracts; *St.*—hypogynous; *An*—2 celled; *O.*—one-celled, superior; *Em*—lenticular; *Fr.*—one-seeded and indehiscent; *Sd.*—with fleshy or mealy *Al.* *T. E.*—Cyperus rotundus and hexastachyus.

Datiscaceae or Datisceae—(The Akalbar family).—

Hb. or *Tr*; *L.*—alternate, exstipulate; *Fl.*—declinous; *Fr.*—dry, opening at the apex; *Sd.*—numerous, minute, without *Al.*

Dipteraceae or Diptercoarpeae—The Garajan family (Sumatra camphor family)—Large *Tr.* with resinous juice; *L.*—feather-veined, involute and alternate; *Cx.*—tubular, ultimately enlarged into wing-like expansion; O. tricolor; *Fr.*—dehiscent or indehiscent, one-seeded; *Sd.*—solitary and ex-albuminous. *T. E.*—Dipterocarpus turbinatus.

Euphorbiaceae—The Erandi or Thuvara (Spurgeworts or Spruce family)—*Sh.* or *Hb.*, generally with an acrid, milky, poisonous juice; L. alternate, mostly opposite, simple or compound, and stipulate or exstipulate; *Fl.*—unisexual, axillary and terminal with bracts; *Cx.*—wanting; *Cl.*—none; sometimes males and females are; on the same plant and sometimes on separate plants *O.*—superior, 3-called; ovules 2 from each cell; *Fr.*—tricoccous; 3 to 6 seeded capsule, dry, and opening with elasticity; or succulent and indehiscent; *Sd.*—one or more in each cell, embryo in fleshy *Al.*, *Ale.* superior. *T. E.*—Acalypha indica; Euphorbia nerifolia; Ricinis communis.

Fabaceae—See "Leguminosae".

Flacourtiaceae—See "Bixaceae".

Fungi or Fungus.—The Gharekuna or Phanasa amba Order (Mushrooms):—Several *pts.* formed of parenchymatous, cellular, or hyphal tissue. Frutification produced in the air and consisting of congeries of cells. having no *fl.* Filaments found intermixed with cells, growing in or upon, decaying or living organic substances, as parasites or saprophytes, nourished through their

vegetative structure called the spawn or mycelium. They are without chlorophyll, variously coloured, soft, fibrous gelatinous, fleshy or leathery. *T. E.*—Agaricus ostreatus; Polyporus officinalis.

Graminaceae—(Grasses).—*Hb.*, *Sh.*, or arborescent *Pts.* with round, commonly hollow jointed *Sm.*, marked with irregular knots from each of which proceeds a sheathing *L*; *L.*—with split sheaths and a ligule with parallel veins, *Fr.*—caryopsis; *Sd.*—with mealy *Al*; *Em.*—lenticular; *Fl*—perfect, unisexual, arranged in spikes, panicles or racemes or solitary and no perianth; *St.*—1 to 6 or more; *O.*—superior, 1 celled, ovule solitary, *Sa.* feathery or hairy. *T. E.*—Cynodon dactylon; Triticum sativum.

Guttiferae—The Kokama or Mangostine Order (Guttifers or Gamboge family)—*Tr.* or *Sh.*, sometimes parasitical, with resinous juice; *L*—entire, simple, coriaceous, opposite and exstipulate. *Fl.*—perfect, sometimes unisexual; *St.*—monadelphous, distinct, of a fragrant odour. *Fr.*—globular, dehiscent or indehiscent; *Sd.*—solitary or numerous, frequently arillate, oily and without *al.* *T. E*—Garcinia mangostana and purpuria.

Labiatae—The Tulasi Order (Labiates or Mints):—*Hb.* or *sh*—usually with square stems; *L.*—strong, scented, opposite, exstipulate and generally serrated; odour strong and aromatic; taste bitter and pungent; *Fl.*—axillary cymes in vertical clusters, generally irregular; *St.*—epipetalous and didynamous; *Fr.*—contain from 1 to 4 achenes; *Sd.*—erect, oblong and generally angular, with little or no *al.*, each *sd.* has a small scar at its attachment.

T. E.—Leucas cephalotes; Ocimum sanctum etc.

Lauraceae—The Dalchini or Taja Order (Laurels):—*Tr.* or *sh.* *L.*—exstipulate, usually alternate, sometimes dotted, generally smooth above and glaucous beneath; *Fl.*—perfect or imperfectly unisexual; *Cx.*—inferior, 4 to 6 cleft., in two whorls; *O.*—superior, 1-celled; *Fr.*—a berry or drupe; *Sd.*—exalbuminous; *Em.*—with large *ctd.* *T. E.*—Cinnamomum cassia.

Leguminosae—The Agathia & Babula Order (Leguminous Plants):—*Tr.*, *hb.* or *sh.* *L.* petioled, alternate stipulate, usually compound; *Fl.*—often papilionaceous or globose; *Fr.*—sometimes a tomentum and rarely a drupe, usually a legume; hence the name of the order; *Sd.*—arillate, one or more sometimes attached to the upper or ventral suture. The *ctds.* are leafy or fleshy. *T. E.*—Acacia arabica; Agati grandiflora; Crotalaria verrucosa; Indigofera enneaphylla; Tephrosia purpurea.

Liliaceae—The Eliyo or Kanda Order (Lilyworts):—*Tr*, *sh.* or *hb.* with bulbs, rhizomes, tuberous or fibrous *R*; *Sm.*—generally simple, rarely branched; *L.*—sessile or sheathing, with parallel veins; *Fl*—regular; perianth green, petaloid or inferior 6-parted; *St.*—6; *O.*—superior, 3-celled; style 1; *Sa.*—simple; *Fr.*—loculicidal, capsule, pod or berry, or succulent and indehiscent, 3-celled; *Sd.*—numerous with fleshy *al.* *T. E.*—Allium cepa; Gloriosa superba.

Loganiaceae—Niramali or Kuchala Order (Loganiads or Logonia family).—*Sh.* *hb* or *tr*; *L.*—opposite, entire, and stipulate; *Sp.*—sometimes in the form of raised line or ridge; *O.* 2 to 3 or 4 celled; style simple below and as many divisions above as there are cells in the *O.* *Fr.*

capsule, or a drupe; *sd.* generally peltate, sometimes winged, fleshy, or cartilaginous and albuminous. *T.E* :— Strychnos nux-vomica and potatorum.

Malvaceae—The Bhinda Order (Mallow-Worts):— *Hb. sh.* or *tr.*, often with hairs; *L.* alternate, stipulate, downy, palmate; *Fl.*—showy, regular and axillary, surrounded by an involucre of variegated colours; *Fr.* indehiscent or dehiscent, capsular or baccate; *C.* 1, 2 or many-seeded; *Sd.* reniform or ovate and hairy, generally without *al*; *Em.* curved, *Ctd.* twisted like chrysalis. *T.E*:— Abelmoschus esculentus; Hibiscus rosa-sinensis; Pavonia zeylonica.

Melanthaceae—See "Colchicaceae."

Meliaceae—The Nima Order (Meliads or Mahogany):- *Tr.* or *sh*; L. exstipulate, alternate, pinnate, or simple, generally oblique and serrated; *Fl*, small and very fragrant; *Fr.* baccate, capsular or drupaceous; *Sd.* few, arillate, exalbuminous. *T. E* :—Azadirachta indica.

Menispermaceae—The Gulavela Order (Menispermads or Moonseeds).—Sh, climbing, trailing or woody; *L.*—simple, entire, exstipulate, alternate. *Fl.*—rarely unisexual, generally dioecious, *P.*—shorter than *S*, *St.*— distinct, sometimes monadelphous, imperfectly developed or wanting; *Sd.*—solitary, moon or kidney-shaped; *Fr.*,— small; *C.*—distinct. *T. E.*—Cocculus cordifolius.

Myristicaceae—The Jaephala Order (Nutmegs).— *Tr.*—with alternate, entire, exstipulate, thick, dotted leathery; *Fl.*—declinate; *Cx.*—leathery, 3 to 4 cleft; male *Fl.*—with 3 to 12 *st.*, filaments distinct; female *Fl.*—of 1 or many *C*; *Fr.*—succulent; *Sd.*—arillate, with copious oily fleshy ruminated *al*; *Em.*—small. *T.E.*—Myristica specios-

Myrsinaceae—The Vavadinga Order (Ardisiads):—*Tr.* or *sh.* *L.*—coriaceous, smooth, exstipulate. *Fl.* small, unisexual or perfect ; *Cx.* and *Cl.* 4 to 5 partite, *An.* longitudinal and dehiscent. *O.*, superior, 1-celled; *Fr.* fleshy, pungent ; *Al.* abundant and horny. *T. E.*—Embelia ribes.

Myrtaceae—The Jambu Order (Myrtleblooms)—*Tr.* or *sh.* with opposite, alternate, entire, exstipulate and usually dotted *L* ; *Fl.*—white or scarlet, generally brown ; *Fr.*—dry or succulent, dehiscent; *Sd.* numerous, exalbuminous. *T. E.*—Eugenia jambolana; Syzgium jambulanum ; Psidium guyava.

Nymphaceae—The Poini Order (Water-Lilies):—Aquatic *hb* ; *L*—cordate and floating ; *Fl.*—solitary; Thalmus large, fleshy, forming a disc-like expansion, more or less surrounding the *O* ; *C.* numerous, united, forming one compound *O*; *Fr.*—indehiscent, many-celled ; *Sd.*—numerous ; *Sm.* minute. *T. E*:—Nelumbium speciosm ; Nymphoea pubescens.

Orchideae or Orchideaceae—The Salamisari Order (Orchids):—*Hb.* or *sh,* terrestrial or epiphytical; *R.*—fibrous or tuberculated ; no true *sm.* but a pseudo bulb; *L.*—entire, generally thick and sheathing; *Fl.*—irregular, reptile shaped, solitary or numerous, with a single bract, hermaphrodite, showy, and of various colours; perianth superior, petaloid, arranged in two whorls ; pollen powdery, more or less collected into grains or in waxy or mealy masses. *Fr.* capsular, 3 valved, rarely fleshy and indehiscent ; *Sd.*—many, minute; *Ta.* loose netted, exalbuminous; *Em.*—fleshy. *T. E.*—Eulophia vera.

Palmaceae or Palmae—The Sopari Order (Palms):—

Tr. or *sh*; trunk straight, slender, simple or rarely branched; *L.*—large, with sheathing stalks featherlike and terminal; *Fl.* unisexual, perfect, arranged generally on a branched spadix, enclosed by a large boat-shaped spathe, perianth inferior, in 2 whorls; *St.* 3 or numerous; hypogynous or perigynous; *O.*, superior, 1-3 celled *Fr*; drupaceous, baccate or nut-like; *Sd.* with minute *em*, *Al.*, fleshy or horny, often ruminated. *T. E.*—Areca catechu; Cocos nucifera.

Papayaceae.—(Papayads or Papau family):—*Tr.* or *sh.* with acrid milky juice; *L.* on long *pt*, lobed and alternate; *Fl*, unisexual or hermaphrodite; *Fr.* succulent and dehiscent; *Sd.* many and albuminous. *T. E*:—Carica papaya.

Pinaceae.—See "Coniferae."

Piperaceae.—The Pana or Pipali Order (Pepperworts):—*Hb.* or *sh.*, jointed, creeping or trailing and giving off small rootlets; woody matter in the *sm.* arranged in wedges; *L.* entire, usually opposite or verticelled, and marked with strong nerves; *Fl.* in spikes, perfect and bracticled; *St.* 2 or more; *O.*, simple, 1-celled; *Fr.* fleshy, small, globular; berries, 1-celled, 1-seeded; *Em.*—erect; *Al.* fleshy and abundant. *T. E*:—Piper species.

Plantaginaceae—Isapoghula Order (Ribworts):—*Hb.* generally without aerial *sm*; *L.*—radical and ribbed; *Fl.*—usually small, perfect; spikes rarely solitary, sometimes unisexual; *Cx.* 4 partite; *Cl.* 4 partite, membranous; *O.*—simple, 2 to 4 celled; *Fr.*—capsular, dehiscent; *Sd.* one or many, mucilaginous; *Em*, fleshy and albuminous. *T. E*:—Plantago ispaghula.

Polygonaceae—The Gul-i-hamaza Order (Buck-

wheats):—*Hb.* or rarely *sh*; *L.*—alternate, with a long *pt*, attached to the *sm.* by a sheath; *sm.* consisting of many swollen joints; *Fl.*—sometimes unisexual; *Cx.*—persistent; *St.* hypogynous; *O.* superior, ovule, solitary; *Fr.*—a nut, usually triangular; *Sd.* solitary and erect, *Em*—with starchy *al.* *T. E:*—Rumex crispus & vesicarius.

Rosaceae—The Gulaba Order (Roseworts):—*Tr. sh.* or *hb.* with prickles and warts on wood surfaces; *L.* simple or compound, alternate, and usually stipulate; *Fl.* regular, rarely unisexual, of different lovely colours and highly odoriferous; *Fr.* entire, a drupe, an achaenium, a follicle or a pome; *Sd.* exalbuminous. *T. E:*—Rosa damascena & moschata.

Rubiaceae—The Majitha Order (Madders):—*Hb. sh.* or *tr*; *L.*—opposite, entire, whorled, having inter petioler *sp*; *Fl.* white, blue, pink, red or yellow. *Fr.* berry, capsular, drupaceous, dry or succulent, inferior, edible, 2 to 10 celled; *Sd.* 1 or more in each cell; *Al.* horny or fleshy. *T. E:*—Morinda citrifolia & tinctoria; Oldenlandia umbellata.

Rutaceae—The Narangi Order (Rueworts):—*Tr*, *sh*, or rarely herbs. *L.* alternate or opposite, exstipulate, simple or pinnated and dotted; *Fl.* regular or irregular and perfect. *Cx.* and *Cl.* with a quaternary or quinary distribution of their parts; *O.* sessile or elevated on a gynophore; *Fr.* capsular, *C.* united or distinct; *Sd.* solitary or in pairs; *Rle* superior. *T. E:*—Citrus decumana and limonum.

Sapotaceae—Mohava or Sapodilla family (Sapotads):—*Tr.* or *sh.* often with a milky juice; *L.* simple, entire, alternate, coriaceous and exstipulate; *Fl.* hermaphrodite,

white, pale yellow or pinkish; *Cx*, 5, persistent; *O*, 4 to 12 celled; *Fr*. fleshy, containing large *sd* with a shining bony *ta*; *Em*. large, albuminous *T. E*:—Bassia latifolia and longifolia.

Scitaminaceae or Scitamineae or Zingiberaceae—The Sunta or Halad Order (Ginger family):—*Hb*. aromatic, rhizomes creeping; *L*. broad, simple, stalked and sheathing, with parallel curved veins springing from the midribs arising from membranous bracts; perianth superior, arranged in whorls; *St*. 3, *an*. 2-celled. *O*. inferior, 3-celled; *Fl*. fragrant, in racemes and in spikes; *Fr*. from 1 to 3 celled, capsular or baccate; *Sd*. many, arillate, albuminous and enclosed in a vitellus. *T. E*:—Musa sapientum.

Scrofulariaceae—The Bama Order (Figworts):—*Hb*. or rarely *sh*, *L*. opposite, entire, or toothed, sometimes parasitical on *r*; *Fl*. irregular, beautiful, and of a blue yellow, or pink colour; *Cx*. 5-lobed, *Cl*. irregular, 2-lipped; *St*. 4, didynamous; *O*. sessile, 2-celled; *Fr*. capsular, baccate, 2-celled; *Sd*. numerous, *Al*. fleshy. *T E*:—Herpestis monniera.

Simarubaceae—The Maharukha Order (Quassiads).—*Sh*. or large *Tr*. *L*. without glands or dots, alternate, compound or simple, sometimes exstipulate; *Fl*.—regular, axillary or terminal; disk conspicuous; *O*—stalked, 4 or 5-lobed, 4 or 5 celled; *Fr*. indehiscent, one seeded and drupaceous; *C*. 4 or 5. *T. E*.—Ailanthus excelsa.

Solanaceae—The Bhuiringani Order (Nightshades):—*Hb*, or *Sh*. *L*.—alternate, often geminate; inflorescence, axillary or extra axillary; *Fl*. isomerous,

O. usually two-celled; style simple; *Sa.*—two-lobed; *Fr.*—capsular or baccate, 2-celled; *Sd.*—numerous and albuminous; *Em* —straight or curved in an annular or spiral form. *T. E.*—Solanum jacquinii and melongena.

Sterculiaceae—The Muradasinga Order (Sterculiads or Cola family):—*Tr.* or *Sh*; *L.* alternate, simple or compound. *Fl.*—white, red or yellow, regular or irregular, perfect or abortive and unisexual; *P.*—sometimes absent; *St.*—united by their filaments into a column indefinite; *An.*—2 celled, extrose; *Fr.*—a number of follicles or capsular, rarely baccate ; *Sd.* with fleshy and oily *al*; *Em.* straight or curved. *T. E.*—Helicteres isora; Guazuma tomentusa.

Umbelliferae—The Ajamoda Order (Umbellifers or carrot family);—*Hb.*[*sh.* or rarely arborescent plants, with hollow or solid furrowed *sm.*; *L.*—alternate, divided, generally sheathing at the base and compound, exstipulate; *Fl.* small umbels of yellow, white, pink or blue colour with or without an involucre. *Fr.* diachaenium or cremocarp, consisting of 2 carpels (pericarp) adhering by their face to a common axis (carpophore) from which they ultimately separate. Each pericarp is indehiscent, one seeded and on its dorsal surface marked with five primary longitudinal ridges or nerves and 4 alternate secondary ridges, separated by interstices or channels in which are longitudinal, oily receptacles or canals called vittae, containing a gummy, resinous, aromatic juice ; *Sd.*—solitary, pendulous and firmly adherent to the pericarp—*Em.* minute, *Al.* horny. *T. E*:—Coriandrum sativum ; Ptychotis ajowan.

Urticaceae— The Vada and Pipal Order(Nettleworts).

Hb. sh. or *tr.* with watery juice; *L.*—stipulate, lobed and alternate, with stinging glands containing an acrid juice; *Fl.*—unisexual, in small *fl.* heads or catkins; *Fr.* indehiscent, one-seeded, surrounded by persistent *Cx*; *Em.* straight and albuminous; *Rle*, superior, *T. E*:—Ficus benghalensis.

Verbenaceae—The Nirgundi Order (Verbenes or Varvains):—*Tr. sh.* or *hb*; *L.* generally opposite, rarely alternate, exstipulate; *Cx.* persistent, tubular; *O.* 2 or 4-celled; *Fl.*, red, white or blue, generally irregular; *Fr.* dry or drupaceous; *C.* 2 to 4 when ripe, separating into as many one-seeded achaenia; *Sd.* erect, with little or no *al.*, *Rle.* inferior. *T. E*:—Vitex negundo.

Vitaceae—See "Ampelideae".

Zingiberaceae—See "Scitaminaceae".

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INDEX of DISEASES (with their Equivalents in Sanskrit) and their REMEDIES.

N. B.—Indian Preparations are in italics.

Abortion (Garbhāpata).—Euphorbia R; (habitual)—Ferula A, Gymelina A, *Javarish-i-lulu*, (threatened)—Pandanus O., Viburnum F., Plumbago species.

Abscess (Vidradhi).—Amaranthus Poly., Basella A., Desmodium T., Hydnocarpus I., Indigofera A., (mammary) Jasminum P. & S, Saccharum O.,—Papaver S., Peucedanum species, Phaseolus species, Pinus species, Sesbania species, Sida A., (scrofulous)—Squalus C. preparations—*Svalpa Masha Taila* (page 659), Tabernamontana species, Viscum A, etc., Zizyphus J. etc.

Acidity (Amlapitta).—Musa S., (pyrosis) Pterocarpus M.—Sodium salts and preparations, Sulphur and its preparations.

Acne (Yavvanpedaka).—Citrus A., Ferula G., Randia D. Terminalia A. etc.

Ague.—Andrographis P., Citrus L., Euphatorium A., Fumaria O., Phoenix species, Quinetum; Quinine; Siegesbeckia O. etc.

Albuminuria (Lalmoha).—See also Bright's Disease.—*Chandraprabha gutika*, *Gokshuradi guggula*.

Alcoholism (Panatyaya; Paramadapana; Madatyaya).—Musa S., Sinapis J., (chronic) Strychnos N.—(also intoxication from datura) Tamarindus I.—Withania S. etc.

Alopecia.—*Bhringaraj taila*, Eclipta E., Hedychium S., Hibiscus Rosa S., Myristica F., Myrtus C., Plumbum and its Salts, Trichosanthes species.

Amenorrhoea (Aarthavadhosha).—Balsamodendron My., Brassica A., Crocus S., Crotalaria J., Euphorbia T., Foeniculam V., Gossypium I., Helleborus N., Hydrocotyle A., Hyssopus O., Parmelia P., Peganum H., Rubia C., Salvadora species., Sapindas T., Semecarpus A., Sesamum I., Silicium salts., Sodium salts and preparations., Vitis Q., Vitex T.

Amaurosis (Sleshmavidagdhadristu) —(tobacco) Strychnos N.

Anaemia (Panduroga).—*Abhra bhasma.*, *Dhatri leha.*, Emblica O., *Kalpam*, *Kalyanaksharam*, *Lauhabhasma*, *Lohasava*, *Navayasa lauha*, Physalis species, Semecarpus A, *Trailokyachintamani Rasa*, Trigonella F., *Tryushanadi Lauha*, *Visamajvarantaka Lauha*, Vitis V.

Anasarca.—Achyranthes A., Allium S., Alocasia I., Apium G., Boerhavia D., Croton T., Cynodon D., (with diarrhoea) *Dugdhavati*, Gmelina A., *Gudashtaka*, Hygrophila S., *Ichhavedivatica*, Jatropha Mon, *Manmandu* (page 47), *Patoladya Churna*, *Punarnavastaka*, *Punarnava Taila*, *Rasa Parpati*, Solanum N., *Sulachanamritabhra*, *Suvarna parpati*, Tiriake F., *Tryushanadi Lauha*, Urine (cow's) and preparations, Urine (Ox's), *Varunadya guda*, *Vijaya parpati.*

Anorexia (Arochaka)—*Amlica Pana*, *Drakshasava*, Emblica O., Feronia E., Gentiana K., *Kapithaashtaka Churna*, *Pippali Arishta*, Quassia E., Sodium salts and preparations, *Vadavanal Churna*.

Anuria (Mutraghatana).—Iris P., Potassium salts., Silicium salts., Sodium salts and preparations., Strychnos N.

Aphonia (Svarabhanga).—Herpestis M., Mangifera I., Nigella S.

Aphthae (Sarvasaramukharoga).—(sores) Berberis A.—Cajanus I., Embelia R., Emblica O., Eucalyptus G., Ficus R., (sprue)—*Grahanikapata Rasa.*—Indigofera Tinc., Myrica N., Myrtus C., Rosa species, Silicium salts, Sodium salts and preparations, *Svalpakhadira-vatika*, Tamarindus I, Terminalia Cheb.

Apoplexy (Sanna; Sannyasa).—Camphora O., Croton T., Garcinia P., Helleborus N., Sinapis J.

Ardor Urinae—Glycyrrhiza G., Gmelina A., Hibiscus Rosa S., *Punarnava Leha.*, Silicium salts.

Arthritis (Sandhivāta).—Acalypha I, *Adityapaka guggula*, (rheumatic) Anisomelos M.—Balsamodendron M, *Chitra Kathi*, (gouty) Garcinia P.—(Stiff joints) *Kubja prasarini taila*, Linum U., Phaseolus species, Ricinis C., Saussurea L., (acute) Semecarpus A., (jaw inflammation) Spilanthus O, Squalus C., preparations, Vitex N. etc.

Ascites (Jalodhara).—Achyranthes A., Andropogon I., Boerhavia D., Calotropis G., Citrullus C., Clitoria T., Crataeva N., Croton T., *Dugdhavati*, *Ichhavedivatica*, *Jalodarari Rasa*, *Kalyanaksharam*, Luffa E., *Maha-naracha Rasa*, *Manmandu*, Moringa P., *Patoladya Churnam*, Pavetta I., Potassium salts, *Punarnavastaka*, *Rasayanamrita Leha*, Serpent Poison preparations, Sodium salts & preparations, Sonchus species, Sulphur and its preparations, *Suvarna parpati*, Urine

(cow's) and preparations, *Varunadya guda*, *Visamajvarantaka Lauha*.

Asthma (Svasakasa):—*Abhra Bhasma.*, Abies W., Adhatoda V. Ailanthus E., *Allae pauk.*, Aloe B., Andropogon C. Althaea O, Bambusa A.. Beninkasa C, Camphora O., Cassia S., *Chaturmukha Rasa.*, Coleus A., *Cowrie Bhasma.*, Crocus S.. Daemia E., Datura A., Erythroxylon C., Euphorbia N., P.. & Tir., Ferula A., & G., Ficus R. Flacourtia C., Galega E. *Gorochanam* (page 1091); (due to worms) *Grahani mihira Taila.*, Hedyotis U., Hedysarum A., *Hingvadi Dhum.*, Hygrophila S. (Cough) Hyoscyamus N. Nicotina T., Polyporus O., Squalus C. preparations., Styrax B,—Hyssopus O., Indigofera Tinc. *Jatiphaladi Churnam.*, *Kalyanaksharam.*, *Kanakaasava.*, *Katphaladi Churna.* *Khandakooshmanda.*, *Kumari Asava*, Lactuca S., Lycopersicum E., *Mahalakshmibilas. Mahasvasari Lauha*, *Mrityanjaya Rasa Mukta Bhasma.*, Myrica N., Myristica F.. Papaver S, Peganum H., *Pippali Arista Pippuladi Lauha.*, Potassium salts. Randia D., Rhus S., Saussurea L., Scindapsus O., Semecarpus A., *Sinhanada guggula.*, Solanum I, Stannum preparations., Strychnos I, Sulphur and its preparations., *Suryavartha Rasa*; *Suvarna Bhasma.*, *Swasabhairava Rasa.*, *Swasa Chintamani.*, *Swasa gajankusa*, *Swasakasa Chudamani.*, *Swasa Kuthar Rasa.*, *Talisadya Churna.*, Terminalia C., Tylophora A., Urtica D., Vasakushmanda kanda., Vasava Leha., Verbascum T., *Vijaya Vati.*, Vitis Q. etc., Zinc salts and preparations., Zingiber O, & Z.

Anuria (Mutraghatana).—Iris P., Potassium salts., Silicium salts., Sodium salts and preparations., Strychnos N.

Aphonia (Svarabhanga).—Herpestis M., Mangifera I., Nigella S.

Aphthae (Sarvasaramukharoga).—(sores) Berberis A.—Cajanus I., Embelia R., Emblica O., Eucalyptus G., Ficus R., (sprue)—*Grahanikapata Rasa.*—Indigofera Tinc., Myrica N., Myrtus C., Rosa species, Silicium salts, Sodium salts and preparations, *Svalpakhadira-vatika*, Tamarindus I, Terminalia Cheb.

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Balanitis.—Basella A.,

Baldness.—See "Alopecia".

Barrenness.—See "Sterility".

Bed Sores.—See "Sores".

Beri Beri.—Tiriake F.

Biliousness.—Feronia E., Garcinia X., Hibiscus A., Lavendula S, Lycopersicum E., (vomiting) Mentha S,—Momordica C, (giddiness) Niccotina T.,—Ptychotis A., Sphaeranthus H. etc., Tamarindus I; Trapa B &c; Viola Species; Zingiber O; Zizyphus J. etc.

Bites (Daunsha) :—(Scorpion and insect) Allium C., Argemone M., Aristolcchia I., Heliotropium I., (scorpion) Carica P., Cissampelos P, Citrullus C., Curcuma L., Cyperus R., Eclipta E, Euphorbia Tir., Ferula A., Gloriosa S. Mucuna P., Nerium O., (insect) Cassia alata., (centipepes) Goleus A., Hibiscus P., (venomous reptiles) Euphatorim A., Ranwolfia S, Strychnos N., (venomous insect) Feronia E., Indigofera Tinct., Kalanchoe L., Ptychotis A., Ranwolfia S., Saccharum O., Sapindas T., (serpent) Lavendula B.,—Luffa Am., (dog) Moringa P., (leech) Polyporus O, (venomous) Sapindas T., (rat) Strychnos N., (venomous animals) Tiriake F.

Bladder Complaints.—See "Cystitis" and "Urinary Complaints."

Blister.—See "Ulcers."

Blood Diseases.—(See also Leprosy, Scrofula, Syphilis, Skin diseases etc.) Stannum preparations., (parasites) Sulphur and its preparations., (impurity) Tylophora A.

Boils (Visphota; Peetika) :—Basella A, Curcuma L., Gynandropis P., *Haridra khanda.*, Heliotropium I.,

Khadirastaka., Lippia N., Peucedanum species, Piper species, Pterocarpus M., Saccharum O., Saxifraga L., Sesbania species., Sida A., & C., Strychnos P., Symplocos R, Toddalia A. etc., Zizyphus J. etc.

Bowel Complaints.—Anacyclus P., Andropogan N., Eucalyptus G. Euphorbia T., *Grahanikapata Rasa*, Holarrhena A., (irritable or inflammatory) Oryza S., Ricinis C, (chronic) *Akara-Karabhadi Churna.*, *Dadimastaka*, *Dugdhavati.*, *Kalu Bhasma.*, *Manmandu*, Ostrea E. and its preparations, Punica G., Sida A., *Suvarna Parpati*, (rectal prolapse) Oxalis C., (irritations) Papaver S,-Peucedanum species, (catarrh) Phaseolus species., (obstructions) Picrorrhiza kurroa., Rubia C.,-Pimpinella A., (tympanites) Piper species,—Plantago I., (ulceration) Plantago I.,—Portulaca species., Ranwolfia S., (duodenal catarrh) Rheum E.,—Saline substances., (spasms) Sinapis., J. (Inflammation) Spinacea O., Spongia O., (pains) *Sula Gaja Kesari.*, Vitis Q., etc., Woodfordia F.

Brain Affections:—(cerebral congestion) Garcinia P., Hedysarum G., (fag) Herpestis M., *Makaradhvaja.*, (meningitis) *Panchavahtra Rasa. Payaeam or kheer.*, (loss of memory) *Magzsudhi.*, *Majoonai Kuvathiabah.* Stannum preparations., *Vrihat panchamula.*, Withania S. etc.

Bright's Disease—(chronic) Juniperis C, Urginia I. etc.,—Sodium salts and preparations, (with dropsy) *Shoathahar Loha.*, Tribulus T.,—*Tryushanadi Lauha.* Vitis V.

Bronchitis (Pittajanyakasa)—See also "Respiratory Diseases":—Abies W., Acorus C., Adhatoda V.,

Ailanthus E. and M., (chronic) Allium C., *Amritashatakapachana.*, Clitoria T., Dipterocarpus T., Euphorbia P., Ferula G., Sulphur and its preparations., (children's) Aquilaria A.,—Asclepias A., Boswellia G., Cephalandra I., Croton T., Cubeba O., *Eladi Churnam.*, Elettaria C., Eucalyptus G., Ferula A., Flacourtia C., Glycyrrhiza G., Herpestis M., Hyssopus O, Ipomoea D. Lactuca S., *Lavangadi Churnam*, Linum U., Lycopersicum E., *Madanadi-vamana*, *Mojoonai Sual.*, Myristica M., Papaver S., Phoenix species, Pimpinella A., Pinus species., Potassium salts., *Rajamriganka Rasa.*, Randia D., Rhus S., Ruta G., Semecarpus A., Strychnos N., Styrax B., Urgina I., *Vidarigandadigana Quath.*

Buboes—(Bada):—Amaranthus Poly., Arum C., Ficus H.

Burning of Palms and Soles of Feet (Padadaha; Hastadaha):—Hedyotis U., (soles of feet) Lagenaria V., Mesua F., Momordica C., Urgina I. etc.

Burns (Dagdhvrana):—Basella A., Cocos N., Gossypium I., Linum U., Mangifera I., *Manjishtadya ghrita.*, Oryza S., Portulaca species., Rubia C., Rumex C., Saccharum O., Sesamum I., Silicium salts., Solanum T., Terminalia Cheb., Trigonella F., Triticum S., Urtica D, Zinc salts and preparations.

Cachexia.—Squalus C. preparation., Strychnos C. etc. Taraxacum O. etc.

Calculi (Asmari Sikata).—Dolichos Bif., Erigeron C. *Gokshuradi guggula.*, Indigofera G., Moringa P., Papaver S., Pavetta I., Pedalium M., Potassium salts., Pyrus species., (uric acid) Saxifraga L.—Silicium salts., Sida R., (urinary) Spinacea O. etc., Vitex

V.—Styrax B., Tribulus T., (stone in the bladder) *Trivikrama Rasa*, Urgina I. etc.

Cancer (Mãnsarbbuda).—Indigofera A., Kaempfera R., Papaver S., Xanthium S. etc.

Carbuncle (Calpuli; Vinata prameha pitika).—Daemia E., *Kalagnirudra Rasa*, Papaver S., Saccharum O., Vateria I., Zizyphus J. etc.

Catarrh.—(Nasal) Agati G.—Allium C., (fever) Alstonia S.—Andropogon C., (chronic) Balsamodendron O.—Barleria P., Barringtonia A., Basella A., Coriandrum S., Curcuma L., Eclipta E., Erythroxylon C., Hordeum V., *Ithrphal.*, Musa S., Piper species., Ptychotis A., (laryngeal) Rumex C., (bronchial) Santalum A., Urtica D.—Solanum D., Swertia C. etc, Vitex N. etc., Vitis V.

Çephalalgia.—Asclepias A., Bassia La., Eclipta E., Emblica O., Michelia C., Nelumbium S, Saussurea L.

Chancre (Dustavrana; Mehavrana) See—"Sores"; "Syphilis" and "Ulcers".

Chicken-Pox (Kanjinya).—Curcuma. L.

Chlorosis (Panduroga).—Balsamodendron My., Crocus S., Gossypium I.

Cholera (Vishuchika; Phatkee):—Andropogon C., Mur., & N., Brassica A., Capsicum A., (infantum) Coffea A.—Cyperus R., Euphatorium A., *Gorochanam* (page 1091)., Mentha P., (cramps) Ptychotis A.—Ranwolfia S., Serpent Poison preparations., Sinapis J., Strychnos I., (collapse) Tiriake F., Zingiber O.—*Verbena oil.*

Chorea.—Hermodactylus G., Nardostachys J., Valeriana species.

Chyluria (Pistameha):—Symplocos R.

Cirrhosis (Yakraddalyudara):—(infantile) Luffa E., Potassium salts.

Colds.—See also "Catarrh":—*Allae pauk.*, Centipeda O., Ceropegia B., Citrus B., Curcuma L., Erythroxylon C., *Ithrphal.*, Ptychotis A., Zingiber O.

Colic (Sula):—(flatulent) Acorus C., Anthemis N., Coriandrum S., Crocus S., Ferula A., Ficus Benja., Pimpinella A., Ruta G.—Alocasia I., (infant.) Andropogan C., Aloe B., Coleus A.—Altingia E., Anisomeles M., Apium G., Asparagus R., Barringtonia A., Caesalpinia B., (Chronic) Canabis S.—Capparis A., Cassia F., *Chaturushana Churnam.*, Clerodendron Infor. Clitoria T., Foeniculam V., Galega P., Gendarussa V., Gloriosa S. (due to worms) *Grahan-i-mihira Taila.*, (colitis) Holarrhena A. Hyssopus O. Illicium V., *Jatiphaladi Churnam.*, *Kalyanaksharam.*, Lavendula S., (painter's) Linum U.—Luffa E., *Madanadi Vamana. Mahanaracha Rasa.*, Melanleuca L., (gastric) Mentha P.—Mucuna P., Myristica F., Nardostachys J., Nicotiana T., Paederia F., Paeonia E., Papaver S., Peganum H., Piper species., Potassium salts., Ptychotis A., Randia D., Ranwolfia S., (lead) Saccharum O.—Saline substances, Sapindas T., *Shankha Bhasma*, Sida C., (renal) Siegesbeckia O. etc—Sinapis J., Solanum I., *Sula gaja Kesari*, Sulphur and its preparations, Tamarindus I., Terminalia Cat., & Cheb., Trigonella F., Vitex N. etc., Zingiber O.

Coma—See "Fainting".

Conjunctivitis (Abhishyanda):—Aloe L., Cassia auri.,

Coleus A., Coptis T., (chronic) Coriandrum S.,—Emblica O., Erythrina I., Memecylon E., Os Sepie, its preparations., Ricinis C., (chemosis) Strychnos P.

Constipation (Aanaha);—Acalypha I., Alocacia I., Bertholletia E., (Brazil nuts)., Beta V., (habitual) Cassia Absus; Euonymus; Sulphur and its preparations—Cassia O; Clitoria T., Emblica O., *Gandhaka Kalka.*, *Gulkhand Ichhavedivatica.*, (chronic) *Ithrphal*-, Strychnos N.—Jatropha Mon., *Kalyana-ksharam.*, Lens E., *Naracha Churna.*, *Naracha Rasa.*, *Piper* species., *Pranadi gutika.*, Psidium G., Rosebay., (obstinate) *Rukkeshee Rasa.*—Stannum preparations, Tamarindus I., *Trivrit Leyham*, *Tumburadya Churna.*

Consumption (Ksyhaya—See also "Phthisis":—*Abhra Bhasma*, Beninkasa C., *Dhanavantritailam*, *Draksha, rista*, *Kumari Asava*, *Lakshadi*. *Taila Narayana Taila*. *Narikelakhanda*, (pulmonary) Squalus C. preparations Vitis V., Withania S. etc.

Convalescence.—Quinetum, Sida A., Toddalia A. etc.

Convulsions (Aakshepaka).—(infantile) Allium C. & S., Cassia O., Ruta G.—(puerperal) Gardenia F., *Gorochanam* (page 1091)—Gynandropsis P., *Masha Taila*, Nardostachys J., *Ovapana*, Sinapis J., *Svalparasuna Pinda.*

Corns (Kadara).—Anacardium O., Carica P., Jasminum G., Oxalis C., (inveterate)—Urgina I. etc.

Corpulence (Sthulata)—See also "Obesity".—Crataeva N., Dolichos Bif., Gardenia G., *Varunadya Guda.*

Coryza (Pratishyaya).—*Chaturushana Churnam*, Curcuma L., Eucalyptus G., Euphorbia P., Myristica M.

Cough (Kasa).—Abies W., Adhatoda V., *Allae pauk.*, Allium C., Anisochilus C., (chronic) Balsamodendron O., Coleus A., Myrica N., *Ovapana*, Solanum T., Trigonella F.—Bambusa A., Beninkasa C., *Chaturushana Churnam*, Cinnamomum C., I. & M., Cochlospermum G., *Cowrie Bhasma*, *Dhatrimodaka Draksharista*, Galega P., Gendarussa V., Glycyrrhiza G., Hibiscus Rosa S., *Hrasva panchamula*, (spasmodic) Hyoscyamus N., Nicotina T., Polyporus O., Solanum I., Squalus C. preparations, Styrax B.—Hyssopus O., Indigofera Pul, *Kantakaryava Leha*, *Katphaladi Churna*, *Lavangadi Churnam*, *Mukta Bhasma*, Myristica M., *Panchakola Churnam*, Papaver S., Piper species, *Pippali Arista*, Rhus S., Saussurea L., Scilla I., (phlegmatic) Scindapsus O.—Sinapis J., Solanum N., *Sringyadi Churna*, (distressing) Styrax B.—Sulphur and its preparations, *Talisadya Churna*, Tamarix G. etc., Terminalia B. & Cheb., *Vasava Leha*, Verbascum T., Viola species, Vitis V., Zingiber O. & Z.

Croup (Svaragneokasa.—Carica P., Eucalyptus G., (spasmodic) Urgina I. etc.

Cystitis (Mutrouksada).—Abutilon I., Acacia A., (chronic) Corchorus C., Santalum A.—Erigeron C., Eucalyptus G., (catarrh of bladder) Gmelina A., Hibiscus Rosa S., Linum U., Liquidambar O., Phaseolus species Sida C., Tribulus T., (spasm of bladder) Vernonia C. etc.

Dandruff.—Canabis S., or C. I., Citrus B., Euphorbia T., Indigofera A.

Debility (Asaktata).—Aconitum H., *Agnithundi vati.*,

Asvagandha ghrita, Alstonia S., (old age) Curculigo O.—Emblica O., Evolvulus A., (nervous) Hibiscus A., *Makaradhvaja;* Trapa B. etc.—Hibiscus S., (constitutional) *Chyavanaprasa*, Kariyat., Lepidium S., *Mahalakshmibilas Rasa.*, *Mandura Loha*, *Majoonai Kuvathiabah*, Melia Azadi., Myristica M, Phoenix species., Soymida F., Toddalia A., Trapa B., Withania S., etc.—*Vasanta Kusumakara Rasa.*

Delirium (Vibhrama).—Camphora O., Lagenaria V., Michelia C., Myristica F., (violent) Papaver S.—Potassium salts., Sinapis J., Zizyphus J. etc.

Diabetes Mellitus (Madhumeha):—Acacia A., Aconitum F., Alpinia G, *Brihat kasturi bhairab*, Cassia Auri., Cassia F., Cassia S., Citrus A., Emblica O, Eriodendron A., Erythrina I., Eugenia J., Ficus B.,&G., *Gaganadhi Lauha.*, Guazuma T., Gymnema S—a specific., Helicteres I., *Kadalyadi ghrita.*, Lodoicea S., Mangifera I., Musa S., Nymphoea species, Orchis M., Papaver S., Phyllanthus species., Pongamia G., Prunus Amygdalus., Psidium G., Rourea S., *Sattgilo* or *Palo.*, *Somanatha Rasa.*, Stannum preparations., Strychnos N., & P., *Tarakeshvara Rasa.*, *Vangeshvara Rasa.*, *Vasanta Kusumakara Rasa.*, *Vrihat Vangeshvara, Rasa*

Diarrhoea (Atisara):—Acacia C. & S., (chronic) Aegle M., Alstonia S, *Ananda Bhairava Rasa.*, *Bhoonimbadhi Churnam.*, Cannabis S., Carica P., Coffea A., Cynodon D., Eugenia J., Galiga P., *Gangadhara Churna (laghu & brihat).*, Garcinia M., *Grahani kapata Rasa.*, Orchis M., Plumbum & its salts., Punica G., Strychnos P, Terminalia Cheb., Vitis V.—

Agaricus A. & O., *Agnikumara Rasa.*, Amaranthus Poly., Anona R. & S., Areca C., *Bael marmalade.*, *Balachaturbhadraka* (page 25), Barringtonia A., Bauhinia V., Butea F., Caesalpinia D. & S., Cedrus D., *Changeri ghrita*, Cinnamomum C., & M., Cylesta S., Cyperus P. & R., Diospyros E., Elephantopus S., Emblica O., Feronia F., Flacourtia C., (acute and chronic) Holarrhena A., *Vajrakapata Rasa.*—*Hriveradi.*, *Isaphgul-ka-chilka.*, Ixora C., *Jatiphaladi gutika.*, Jatropha C., *Jawarish-a-kammon.*, *Jirakadi Modaka.*, Kalanchoe *L.*, *Kalu Bhasma.*, *Kapithashtaka Churna.*, *Kutajarishta.*, *Kutajashtaka.*, Lepidium S., Mangifera I., Melanleuca L., Musa S., (summer and choleraic) Myristica F., Myrtus C.,—Nigella S., Nymphoea species., Ostrea E. & its preparations., Poenia F., Papaver S., Parmelia P., Physalis species., Pongamia G., Pterocarpus M., Ptychotis A., Quercus I., Randia D., (also teething) Rheum E.,—(infantile) Rhus S., Ricinis C., (with high fever) *Sambunath Rasa.*, Sindapsus O., Sesbania species, *Shankhavati.*, Shorea R, *Shulaharanayoga.*, Silicium salts., Sodium salts and preparations., Soymida F., Spongia O., (atonic) Strychnos N., Terminalia T. etc., —Tabernamontana species., Tamarix G. etc., Terminalia A., & B., Tiriake F., Toddalia A. etc., Trapa B. etc., (puerperal) Trigonella F., Tylophora A., Urine (Ox's)., Vitex N. etc., Woodfordia F., Zingiber O., Zizyphus J. etc.

Diphtheria (Kantharohini):—Capsicum A., Eucalytus G., Mentha P., Sodium salts and preparations.

Dipsomania (Oonmada):—Capsicum A., Coriandrum S.,

Ptychotis A., Zinc salts and preparations.

Dropsy (Shopharaga; Svayathu):—Achyranthus A., *Adityapaka guggula.*, *Amrita guggula.*, Argemone M., Asparagus O., Balsamodendron M., Bauhinia V., Cocculus C., Croton T., Euonymus., Euphorbia N., (hepatic) Galega P., Juniperus C., Helleborus N., Hermodactylus G., Hygrophila S., Indigofera Tinct., Ipomoea., P. & T., *Jalodarari Rasa.*, *Kaisara guggula.*, *Kanchanara guggula.*, *Lokanatha Rasa.*, Moringa P., Mucuna P., Nigella S., (renal) Pavetta I., Urgina I. etc., Rubia C., *Sadanga guggula.*, Scilla I., (anæmia) *Shoathahar Loha*, Strychnos I., Symplocos R., etc., Taraxacum O., etc. Terminalia B., Tribulus T, Trigonella F., *Triphala guggula.*, (cardiac) Urgina I., etc., *Vahni Rasa.*, *Vatari Rasa.*, Vernonia C. etc., Zingiber O.

Dysentery (Aamatisara; Aamansha; Aavarakta):— Acacia A. & C., Adhatoda V., (chronic) Aegle M., Alstonia S., *Bael marmalade.*, Balsamodendron O., Diospyros E, Eucalyptus G., Eugenia J., Musa S., Orchis M., Pterocarpus species., Rheum E., Rumex C., *Shankhavati.*, Sida C., Strychnos N., Sulphur and its preparations., Agaricus O. Ailanthus M., Allium C., Aloe L., Anona S., Asclepias A. & C., Asparagus A., Bauhinia T., & V., *Bhoonimbadi Churnam.*, *Bilva Panchaka.*, Bixa O., Bombax M., Butea F., Caesalpinia S., Calotropis G., Cannabis S., Careya A., (chronic infantile) Cedrela T., Cedrus D., *Changeri ghrita.*, Citrus B., & M., Cochlospermum G., (acute) Corchorus C., Euphorbia P., Symplocos R., Curcuma Ang., Cylesta S., Cynodon D., Cyperus

P., & R., Diospyros M., Elephantopus S., Emblica O., Eriodendron A., Erythrina I., Evolvulus A., Feronia E., Ficus B., & C., Flacourtia C., Flemingia T., *Gangadhar Rasa.*, *Gangadhara Churna.*, (*Laghu* and *Brihat*) Garcinia M., & Pur., Geranium W., Gossypium I., & R., Gracilaria L., *Grahani-kapata Rasa.*, Grewia P., Hermodactylus G., Hibiscus P. Holarrhena A., Hydrocotyle A., *Isaphgal-ka-Chilka.*, Ixora C., *Jatiphaladi gutika.*, Kalanchoe L., *Kapithashtaka Churna.*, *Kutaja leha.*, *Kutajarishta*, *Kutajastaka.*, Litsea S., Luffa Am., (bleeding) Mangifera I., Mesua F., (typhoid) Myrica N., Myrtus C., Nelumbium S., Ochrocarpus L., Ocimum species., Oxalis C., Papaver S., Parmelia P., *Patadya Churna.*, Phyllanthus species., Physalis species., Potassium salts., *Prituka Churna* (page 627)., Punica G., Pyrus species., Randia D., Saccharum O., Saline substances., Santalum A., Saraca I., Sesamum I., *Shankha Bhasma.*, Shorea R., Silicium salts., Soymida F., Spondias M. etc., Spongia O., Tamarindus I., Tamarix G., etc., Terminalia A., etc., (mucous stools) Terminalia Cheb., Trigonella F., Tylophora A., *Vajrakapata Rasa.*, Woodfordia F.

Dysmenorrhoea (Asrigdhara):—Abroma A., Brassica A., Cannabis S., Crocus S., Datura A., Erythrina I., Gossypium I., *Jatiphaladi Churnam.*, Melanleuca L., Musa S., Myristica F., Semecarpus A., Sesamum I., (and after-pains) Viburnum F.

Dyspepsia (Agnimandya; Amlapitta) :—*Abhra Bhasma.*, Aconitum H., Acorus C., *Agnimukha Churna.*, Ailanthus Ex., and M., *Allaepauk.*, Amorphophallus

C., (with loss of appetite) *Amlica pana.*, *Amritakalpa Rasa.*, *Amrita Vati.*, *Ananda-bhairava Rasa.*, *Bhoonimbadi Churnam.*, *Tankanadi Vati.*, Andropogon M.—Anisomeles M., Anthemis N., Artemesia A., Asparagus R., *Astachurnam* (page 678)., *Balachaturbhadraka* (page 25)., Beninkasa *C.*, *Brihat Suran Madaka.*, Capsicum A., Carica P., Cinchona C., Cinnamomum C., and I., (*atonic*) Citrus Au., and M., Coptis T., Elettaria C., Hibiscus A., Lycopersicum E., Rheum E., Terminalia Cheb., (bilious) Cocculus V., Gentiana K., Spondias M. etc.—Coriandum S., Cosmostigma R., *Cowrie Bhasma.*, *Dhanani-dala.*, *Dhatri aritsa.*, *Dhatri leha.*, *Dhatrimodaka.*, *Drakshasava.*, Embelia R., Emblica O., Galega P., Grangea M., *Guda mandura.*, Hedychium S., Hemidesmus I., Hibiscus S., *Hingavashtaka Churna.*, *Hriveradi.*, Hyssopus O., Jatropha C., *Jawarish-ai-kammon.*, *Jirakadi Modaka.*—(anorexia)., *Kalpam Kalyanaksharam.*, *Kapardaka Bhasma.*, Lactuca S., *Laghu Surana Madaka.*, *Laja* (page 626), Mesua F., *Methi Modaka.*, Michelia C., Mucuna P., Myristica F. & M., Nigella S., *Narsimha Churna.*, *Narikelakhanda.*, *Narikelakshara.*, Nymphoea species., Oryza S., Ostrea E., & its preparations, Oxalis C., *Panchakola Churnam.*, Parmelia P., Piper species, *Pittantaka Rasa.*, Pongamia G., *Pranada Gudika.*, *Pranadi gutika.*, *Pravala Bhasma.*, Ptychotis A., Pyrus species., Quassia E., Rumex C., Saline substances., *Samasarkara Churna.*, *Sambuka Bhasma.*, *Saubhagya Sunti.*, Saussurea L., Semecarpus *A.*, *Shanka bhasma.*, Sida A., Sodii B., (painful) *Bhaskara lavanam.*, *Brishta tandula* (page

626)., *Shulaharanayoga.*, Sodium salts & preparations., Urine (Cow's) and preparations.,—Stannum preparations., Strychnos C. & N., *Sukti Bhasma.*, Sulphur and its preparations., *Svalpa methi modaka.*, Swertia C., etc., Taraxacum O., Terminalia B., Trigonella F., *Trivrit Leyham*, *Tryushanadi* Lauha., (with flatulence) *Tumburadya Churna.*, Vitex N. etc., (acid) *Vidyadharabhra.*, Vitis V.,—Xanthoxylum species.

Dyspnoea.—Aloe B., Andropogon C., Eucalyptus G., *Kumari Asava.*, Melanleuca L., Sinapis J., Terminalia B., (emphysematous) Withania S.

Dysuria (Mutrakrachha) :—Abelmoschus E., Bombax M., Cannabis S., Clitoria T., Corchorus C., Curcuma Ang., Elephantopus S., Erythrina I., Glycyrrhiza G., Gmelina Asi., *Gokshuradi guggula.*, Hibiscus S., Hygrophila S., Scilla I., Solanum I.

Ear-Ache (Karnasula) :—Allium S., Alstonia S., Cardiospermum H., Cleome V., Crinum D., Datura A., Erythrina I., Euphorbia Tir., Grangea M., Myristica M., Ocimum species., Pandanus O., Papaver S., Piper species., Ptychotis A., *Shankha Bhasma.*, Spondias M. etc., (with discharges) Squalus C. preparations., (tympanitis) Sulphur and its preparations., (also with sores). Trichosanthes species.

Eczema (Kanda):—*Adityapaka taila.*, Amaranthus Poly., Calotropis G., Cassia alata., Citrus Au., Cocculus V., Cucumis Melo., Curcuma L., Hydrocotyle A., Jatropha C., *Jirakadya taila.*, *Karaviradya Taila.*, *Pancha valkaladi Tailum.*, *Sinduradya Taila* (tetter), Triticum S., Zinc salts and preparations.

Elephantiasis (Slipada)—See "Filariasis":—Eclipta E.,

Guazuma T., Hemidesmus I., (for fever) *Hubbai Sahfa.*,—Hydrocotyle A., Ichnocarpus F., Indigofera A., Mucuna P., Picrorrhiza kurroa., Sida C.

Emphysema :—*Punarnavastaka.*, Strychnos N., Urgina I. etc.,

Enteritis—See "Typhoid" Fever.

Epididymitis :—(gonorrhoeal) Vitex N. etc.

Epilepsy (Apasmara) :—Acorus C., Adhatoda V., Allium C., Anacyclus P., Beninkasa C., *Brahmi ghrita.*, Brassica A., Camphora O., Canscora D., *Chaturmukha Rasa.*, (nocturnal) Cocculus S., Datura A., Execaria A., Flemingia S., Gossypium I., Hermodactylus G., Herpestis M., Hyocyamus N., *Kumari Asava.*, *Kushmanda ghrita.*, Lycopodium C., Moringa P., (hystero) Nardostachys J., *Ovapana.*, Paeonia E., Pandanus O., Peteroselinum S., Plumbum and its salts., Sapindas T., Semecarpus A., *Siddhartha ghrita.*, Smilax C. etc., Sodium salts and preparations., Sulphur and its preparations., Trichosanthes species., Urine (goat's) preparations., Valeriana species., (locally) *Vasachandanadi Taila.*

Epistaxis (Nasarakta).—*Apamarga Taila*, Crotalaria J., Cynodon D., Dalbergia Sis., Emblica O., Gossypium I., Rhus S., Silicium salts., Triticum S., Vitis Q., etc.

Erysipelas (Visarpa).—Eucalyptus G., Indigofera A., *Kalagnirudra Rasa.*, Portulaca species., *Tribhuvan keerti Rasa.*, Triticum S.

Erythema.—Coriandrum S.

Eye Diseases (Netraroga).—Acacia S.' (Tinea tarsi) Erythrina I., (sore) Heliotropium S.' Hydnocarpus

I., Peteroselinum S, (weak eyes) Jasminum G. and S., Musa S., (painful eyes) Piper species., —Plumbum and its species. Rosa species, (country sore) Saccharum O.,—Saxifraga L., Sesamum I., (Lachrymation) Strychnos P.,—Symplocos R., (blood shot eyes) Vernonia C. etc.,—Zinc salts and preparations.

Fainting (Moorcha; Bhramanidra) also "Coma":—Allium C. & S., Anona S., Moringa P., Nicotina T., Zingiber O.

Felons See "Sores"; "Wounds" etc.:—Euphorbia A.

Fevers (Jvara):—Aconitum F. & H., Acorus C., (eruptive) Agati Gr., Oryza S., Potassium salts.,—(after effects) Alstonia S., (intermittent & remittent) *Ananda Bhairava Rasa.*, Andrographis P., Clerodendron Inerme., Andropogon M., Anisomeles M., (intermittent) Aristolochia I., Calotropis G., Cinchona C., Gentiana K., Gossypium I., Melia Azadi., Nigella S., Quinetum., Quinine., Soymida F., Strychnos N., *Taruna Jvarari.*, Vitex T., Zingiber O., (with delirium etc.) *Ashtadasanga pachana.*, (chronic fever with emaciation and anaemia) *Kiratadi Taila*, Berberis A., Bixa O., Caesalpinia B., Camphora O., (rheumatic and inflammatory) Cassia S.—Cocculus C., (chronic) Cyperus R., *Jvarabrahmastra*, *Jvarasani Rasa.*, Punica G., *Sattgilo or Palo.*, Solanum I., *Sudarsana Churna.*, Sulphur and its preparations., *Visamajvarantaka Lauha.*, Zinc salts and preparations, *Dasamula Kvatha.*, Dichrosa F., Eucalyptus G., Gendarussa V., (bilious) Glycyrrhiza G., Podophyllum E., Quassia E., *Tribhuvan keerti Rasa.*, Trichosanthes species., Vitis V., *Vrihat Panchamula.*, (remittent)

Chandesvara Rasa., *Darubrahma Rasa.*, Gmelina A., Hedysarum G., *Hinguleshvara.*, *Svasakuthara Rasa.*, Toddalia A., etc. (drink) Hordeum V., (catarrhal) *Hrasva panchamula.*, Rhus S., Vitex N. etc.,-Hydrocotyle A., Indigofera E., *Jwaramurari Rasa* (with liver derangement) *Kalingakadi kvatha.*,—*Kaphaketu Rasa*, (low) Melanleuca L., *Patoladi kvatha.*, Salvadora species; Nyctanthes A., Ocimum species, *Panchavaktra Rasa* (ague) Quinine; *Ramabana Rasa.*, Santalum A., *Saubhagya Vati.*, Semecarpus A., Solanum N., Spinacea O., Symplocos R., Terminalia Cheb., Vernonia C. etc., (puerperal) Vitex N. etc, (Haemoglobinuric) Vitex P., Xanthoxylum species.

Filariasis:—*Hubbai Sahfa.*, Rosebay., Symplocos R.

Fissures —See "Wounds" etc: - Garcinia P., (cracks of feet) Mangifera I., Sodium salts and preparations.

Fistula (Bhagandara):—(anal) Ficus R., Hibiscus P., Mimosa P.

Flatulence:—Allium S, Andropogon N., Apium G. *Chaturushana Churnam.*, Cinnamomum C. and I., Curcuma L., C., and Z., Cuscuta R., Embelia R., Ferula A., (with colic) Ficus Benja.,—Foeniculum V., *Gudashtaka.*, *Hingavashtaka Churna.*, Hyssopus O., Illicium V., Jatropha Mon., Melanleuca L, Nardostachys J., *Pancha-kola Churnam.*, Pongamia G., *Pranada gudika.*, Ptychotis A., Saline substances, *Shaddharana Yoga.*, Sodium salts and preparations., Solanum I., Terminalia Cheb., Trigonella F., *Trivrit Leyham.*, *Tumburadya Churna.*, Zingiber O.

Foreign-Body:—(in stomach, eyes and ears) Ricinis C., (in eyes) Saccharum O.

I., Peteroselinum S, (weak eyes) Jasminum G. and S., Musa S., (painful eyes) Piper species., —Plumbum and its species. Rosa species, (country sore) Saccharum O.,—Saxifraga L., Sesamum I., (Lachrymation) Strychnos P.,—Symplocos R., (blood shot eyes) Vernonia C. etc.,—Zinc salts and preparations.

Fainting (Moorcha; Bhramanidra) also "Coma":—Allium C. & S., Anona S., Moringa P., Nicotina T., Zingiber O.

Felons See "Sores"; "Wounds" etc.:—Euphorbia A.

Fevers (Jvara):—Aconitum F. & H., Acorus C., (eruptive) Agati Gr., Oryza S., Potassium salts.,—(after effects) Alstonia S., (intermittent & remittent) *Ananda Bhairava Rasa.*, Andrographis P., Clerodendron Inerme., Andropogon M., Anisomeles M., (intermittent) Aristolochia I., Calotropis G., Cinchona C., Gentiana K., Gossypium I., Melia Azadi., Nigella S., Quinetum., Quinine., Soymida F., Strychnos N., *Taruna Jvarari.*, Vitex T., Zingiber O., (with delirium etc.) *Ashtadasanga pachana.*, (chronic fever with emaciation and anaemia) *Kiratadi Taila*, Berberis A., Bixa O., Caesalpinia B., Camphora O., (rheumatic and inflammatory) Cassia S.—Cocculus C., (chronic) Cyperus R., *Jvarabrahmastra*, *Jvarasani Rasa.*, Punica G., *Sattgilo or Palo.*, Solanum I., *Sudarsana Churna.*, Sulphur and its preparations., *Visamajvarantaka Lauha.*, Zine salts and preparations, *Dasamula Kvatha.*, Dichrosa F., Eucalyptus G., Gendarussa V., (bilious) Glycyrrhiza G., Podophyllum E., Quassia E., *Tribhuvan keerti Rasa.*, Trichosanthes species., Vitis V., *Vrihat Panchamula.*, (remittent)

Chandesvara Rasa., *Darubrahma Rasa.*, Gmelina A., Hedysarum G., *Hinguleshvara.*, *Svasakuthara Rasa.*, Toddalia A., etc. (drink) Hordeum V., (catarrhal) *Hrasva panchamula.*, Rhus S., Vitex N. etc.,-Hydrocotyle A., Indigofera E., *Jwaramurari Rasa* (with liver derangement) *Kalingakadi kvatha.*,—*Kaphaketu Rasa*, (low) Melanleuca L., *Patoladi kvatha.*, Salvadora species; Nyctanthes A., Ocimum species, *Panchavaktra Rasa* (ague) Quinine; *Ramabana Rasa.*, Santalum A., *Saubhagya Vati.*, Semecarpus A., Solanum N., Spinacea O., Symplocos R., Terminalia Cheb., Vernonia C. etc., (puerperal) Vitex N. etc, (Haemoglobinuric) Vitex P., Xanthoxylum species.

Filariasis:—*Hubbai Sahfa.*, Rosebay., Symplocos R.

Fissures —See "Wounds" etc: – Garcinia P., (cracks of feet) Mangifera I., Sodium salts and preparations.

Fistula (Bhagandara):—(anal) Ficus R., Hibiscus P., Mimosa P.

Flatulence:—Allium S, Andropogon N., Apium G. *Chaturushana Churnam.*, Cinnamomum C. and I., Curcuma L., C., and Z., Cuscuta R., Embelia R., Ferula A., (with colic) Ficus Benja.,—Foeniculam V., *Gudashtaka.*, *Hingavashtaka Churna.*, Hyssopus O., Illicium V., Jatropha Mon., Melanleuca L, Nardostachys J., *Pancha-kola Churnam.*, Pongamia G., *Pranada gudika.*, Ptychotis A., Saline substances, *Shaddharana Yoga.*, Sodium salts and preparations., Solanum I., Terminalia Cheb., Trigonella F., *Trivrit Leyham.*, *Tumburadya Churna.*, Zingiber O.

Foreign-Body:—(in stomach, eyes and ears) Ricinis C., (in eyes) Saccharum O.

Fractures (Astibhagna):—Terminalia A., etc., Vitis Q. etc.

Gastralgia:—*Bhaskara Lavanam.*, Pterocarpus species.

Gastritis (Gulmam):—(chronic) *Bhaskara Lavanam.*, Michelia C., Semecarpus A., Peucedanum species., Pimpinella A., Piper species., Plantago I., Plumbago species., Raphanus S.

Gastrodynia (Annadravasula):—Raphanus S.

Genito-Urinary Diseases:—Acacia A., Cucumis U., Hemidesmus I., Hibiscus Rosa S., Hygrophila S., Ocimum species., Papaver S., Phoenix species., Phyllanthus species., Plantago I., (discharges) Plumbum and its salts.,—(Superficial excoriations of genital organs) Pterocarpus species., (distressive irritation of genital organs)., Sodium salts and preparations., (vaginal discharges) Sodium salts and preparations., Stannum preparations., Tribulus T., Vitis V.

Glandular Inflammation:—Moringa P., Papaver S., Silicium salts., (lymphatic and secreting) Potassium salts.,—Sodium salts and preparations., Strychnos N., Vitex N., etc., Withania S. etc.—Sphaeranthus H. etc., (suppurating) Squalus C. preparations.

Gleet:—Asparagus A., Balsamodendron O., Canarium C., Cubeba O., Cynodon D., Dipterocarpus T., Garcinia M., Geranium W., Myrica N., Pinus species., Quercus I., Rhus S., Santalum A., Sida R., Stannum preparations., Tribulus T., *Vasantakusumakara Rasa.*, Xanthium S. etc.,

Goitre (Galaganda):—Gracilaria L., Laminaria S., Sphaeranthus H.

Gonorrhoea (Sukra; Payameha):—Abelmoschus E., Abutilon I., Acacia A., C., F., & S., (chronic) Aegle M., Asparagus R., Cocculus C., & V., Myrica N., *Prameha Mihira Taila.*,—Agave A., Althaea O., Amaranthus Poly., *Amrita guggula.*, Averrhoea A., Balsamodendron M. & O., Basella A., Bauhinia V., Boerhavia D., Bombax M., Borassus F., Boswellia G., Calotropis G., Canarium C., Cephalandra I., *Chandraprabha gutica.*, Citrullus V., Corchorus C., Cubeba O., Cucurbita M., Curculigo O., Curcuma Ang., & Z., Datura A., Dillenia I., Diospyros E., Dipterocarpus T., Emblica O., Enhydra F., Eriodendron A., Euphorbia T., Ficus B., Galega P., Garcinia M., Geranium W., Gloriosa S., Gmelina A., & Asi., *Gokshuradi guggula.*, Grewia V., Hibiscus A., R., & S., Holostemma R., Hydnocarpus I., Hydrocotyle A., Ipomoea P., Ixora C., Juniperus C., *Kaisara Guggula*, *Kanchanara guggula.*, Lawsonia A., Linum U., Liquidambar O., Malva S., Memecylon E., Michelia C., Mimosa Am., Musa S., *Pachanabheda Churna.*, Pistacia species., Pongamia G., Prunus amygdalus., Pyrus species., Quercus I., Raphanus S., *Sadanga guggula.*, *Salvarsan*., Santalum A., Sesamum I., *Shankha Bhasma.*, Shorea R., Sida A., C., & R., Silicium salts., Sodium salts and its preparations., Spondias M., etc., Stannum preparations., Strychnos P., *Suvarna Vasanta Malti.*, Terminalia A. etc., *Vatari Rasa.*, Zinc salts and preparations.

Gout (Vatarakta):—Aconitum., Allium S., (chronic) Asparagus O.,—Brassica N., Capparis A., Cassia T., Celastrus P., Citrus Au., C., & B., Cocculus C.,

Colchicum L., Datura A , Dodonaea V., Euphorbia A., Ficus C., Flacourtia S., Gossypium I., Hermodactylus G., Hyoscyamus N., Ipomoea P., & T., Litsaea S., Lycopersicum F., Michelia C., Mullugo C., Morinda C., Moringa P., Paederia F., Physalis species., Pinus species; Plantago I., Potassium salts., Psidium G., Pyrethrum I., Pyrus species., Ricinis C., Rosebay., Sapindas T., *Sarveshvar Rasa.*, Semecarpus A., Smilax C. etc, Sodium salts and preparations., Solanum N. & T., Strychnos N., Sulphur and its preparations., Tribulus T., Tylophora A., Vitis V., Zingiber O.

Gravel :—Gossypium I, Hygrophila S., Mimosa P., Saxifraga L., (uric acid) Sodium salts and preparations.

Gums, Diseases of :—(Dantaveshtharoga):—Acacia C.,& S., (bleeding) Areca C., Gossypium I., *Kathlon.*, Rhus S, Symplocos R., (spongy) Balsamodendron My., Cajanus I., Eugenia J., *Kathbol.*, Morinda C., Rumex C., Symplocos R., (spongy and bleeding) Eucalyptus G., Phyllanthus species., *Svalpakhadiravatika.*, (boils) Heliotropium I., & S., Jatropha C., (bleeding teeth) Barleria P., (swelling) Psidium G., (irritation) Spilanthus O.

Haematemesis (Aamasayakshata) :—Dalbergia Sis., Mangifera I.

Haematuria (Shonitameha) :—Abutilon I., Bauhinia V., Saccharum O., Sida C.

Haemoptysis (Oorakshata):—Abies W., Adhatoda V., Bambusa A., Beninkasa C., Cucurbita M., Dalbergia

Sis., Erigeron C., Ficus G., *Khanda kooshmanda.*, Stannum preparations., Talisadya Churna., *Vasakushmand kanda.*, *Vasava leha.*, Vitex N., etc.

Haemorrhage (Raktapitta):—Acacia A., & C, *Amalakadya Lauha.*, Arum C., Cucurbita M., Emblica O., Erigeron C., *Friar's Balsam.*, Geranium W., Jatropha C., *Kandakadya Lauha.*, Mangifera I., Nymphoea species., Pavonia O., (Postpartum) Plumbago species., Viburnum F., (rectal) Plumbum and its salts., (internal) Potassium salts; Quercus I., Silicium salts., *Utphaladi Sritam.*, Woodfordia F.,—Pterocarpus species., (uterine and pulmonary) Rosa species., (urethral) Santalum A.,—Saraca I., *Sudhanidhi Rasa.*, Terminalia A., etc., Urtica D., Viscum A. etc., (intestinal) Vitex N. etc.

Haemorrhoids—See "Piles."

Headache (Sirasula):—Agati G., Allium S., Andropogon Mur., Aquilaria A., Barringtonia A., Basella A., Centipeda O., Cinnamomum C., Coleus A., Crocus S., Cubeba O., Embelia R., (rheumatic) Ficus Benja.,—Gossypium I., Herpestis M., Ipomcea R., Ixora C., Jasminum G., Lavendula S., Luffa Am., (nervous) Melia Azeda., Peterospermum species., (congestive) Mentha P., Momordica D., Moringa P., Myrica N., Myristica M., Nardostachys J., (bilious) Oxalis C., Pyrus species., Pandanus O., Phoenix species., Pimpinella A., Potassium salts., Pterocarpus species., Randia D., (obstinate) Saccharum O., Sinapis J.,—Santalum A., (neuralgic) Sodium salts and preparations.,—Spilanthus O., Strychnos N., Terminalia Cat.-etc., Trichosanthes species., Vitex N. etc., Zingiber O.

Heart-Disease (Hridroga).—Allium S., *Arjunabhra.*, (Heart-burn) Citrus B.,—Musa S., *Dava-ul-mulk.*, *Majoonai Kuvathiabah*., (palpitation) Mentha P., Nardostachys J., Viscum A. etc. (irritable heart and angina) Papaver S., (aneurism of aorta and hypertrophy) Plumbum and its salts..—Sodium salts and preparations., Solanum N., Terminalia A. etc., *Vasa-kushmanda kanda.*, Vitis V.

Hemicrania (Arthasisa).—Barringtonia R., Caryota U., Centipeda O., Clitoria T., Embelia R., Ferula A., Hedysarum A., Luffa Am., Sapindas T., *Vidanga Taila.*

Hemiplegia.—*Ajmodadi Churna.*, Asparagus R., Atalantia M., Ichnocarpus F., Illicium V., *Mashabaladi.*, *Mashabaladi Kvatha.*, *Narayana Taila.*, Orchis M., *Svalparasuna Pinda.*, *Vataraktantaka Rasa.*

Hepatitis (Yakrattalyudara).—Croton O., Viscum A., etc.

Herpes (Kaksha).—Ammonia B., Argemone M., Butea F., Cassia alata., *Chaulmugra Ointment.*, Cucumis T., Gynocardia O., Jasminum Ang., Jatropha C., (Herpes Zoster) Pterocarpus species., (tetter) Triticum S.

Hiccup (Hikka, Oochaku).—Ananas S., Cassia S., Hyoscyamus N., Mentha P., Menthus A.

Hoarseness (Svarabheda)—See also "Aphonia".—Abrus P., Alpinia G., Flacourtia C., Glycyrrhiza G.

Hydrocele (Andavriddhi).—Altingia E., (chronic affections of testes) Rosebay.,—Sesbania species., (painful and swollen) Solanum N.

Hydrocephalus.—(Chronic) Squalus C. preparations.

Hydrophobia (Jalatrasa.)—Cerebera O., Datura A., Euphorbia N., Ophiorrhiza M., Strychnos N.

Hydrothorax.—Sonchus species.

Hypochondriasis.—Ferula A., Hydrocotyle A., Hyoscyamus N.

Hysteria. (Apasmara; Apatantraka):—Acorus C., Adhatoda V., Allium C. & S., Anona S., *Brahmighrita.*, Brassica A., Camphora O., Citrus Au., Curcuma L., Echinops E., Elaeodendron G., Ferula A., & G., *Gorochanam* (page 1091); Grangea M., Hermodactylus G., Herpestis M., Hibiscus A., Hyoscyamus N., Hyssopus O., Moringa P., Nardostachys J, Ptychotis A., Quassia E., Ruta G., Sapindas T., *Siddhartha ghrita.*, Sodium salts & preparations., Valeriana species,, (locally) *Vasa chandanadi Taila.*, Viscum A. etc., Viverra C., Zinc salts & preparatins.

Impetigo.—Cocculus V., *Karaviradya taila.*

Impotence.—*Abhraka Bhasma & Kalka.*, *Akaradi Churna.*, *Akarakarabhadi Churna.*, Amaranthus Poly., *Amritashtakapachana.*, Asparagus A., Bassia La., *Chandrodaya Makaradhvaja.*, Crocus S., Cycas C., *Dava-ul-mulk.*, Dendrobium M., Echinops E., Eriodendron A., Helianthus T., Hermodactylus G., Hibiscus Rosa S., *Javarish-i-lulu*, *Java rusa uda.*, Lepidium S., *Mahalakshmibilas Rasa.*, *Majoonai Kuvathiabah.*, *Makaradhvaja.*, *Mashadi Modaka.*, *Methi ladu.*, Mucuna P., Myristica F., *Narasimha Churna.*, Nardostachys J., Orchis M., Ostrea E. & its preparations., Pedalium M., *Phalaghrita.*, Phaseolus Species., Pinus species., Pistacia species., *Ratnagiri Rasa.*, *Sarvangsundari Rasa.*, *Shalavari ghrita.*, Smilax C. etc., Sphaeranthus H. etc.,

Stannum preparations, Strychnos N., *Suverna Vasanta Malti.*, Tiriake F., *Trailokya Chintamani Rasa.*, Tribulus T., *Vakeria ladu.*, *Vanari vatika.*; *Varunadya ghrita.*, *Vasantakusumakara Rasa.*, *Vrihat Asvagandha ghrita.*, Withania S.,

Indigestion (Apachana; Ajeerna).—*Agnikumara Rasa.*, *Allae pauk.*, *Amrita Vati.*, *Bhaskara Lavanam.*, *Chatuhsama Vati.*, *Dhana-ni-dala.*, *Drakshasava.*, Gentiana K., *Jawarish-ai-kammon.*, (want of acidity) *Jawarishai Thrush.*, (for causing emesis) *Madanadhi Vamana.*,—Myristica M., (digestive disorders) Plumbago species.,—Ptychotis A., Saline substances., *Vaishnavanar Churnam.*, Vitis Q. etc., Zingiber O.

Inflammations.—Aconitum F., (Breasts) Aloe L., Datura A., Polyporus O.,—Gynandropsis P., Hugonia M., Linum U., Pavonia O., (gastro-intestinal) Phaseolus species.,—Phyllanthus species., Pterocarpus species., (of mucous membranes) Pyrus species.,—Rubia C., (rheumatic) Sesbania species., Soymida F., *Svalpa Masha Taila* (page 659)., Tamarindus I., Withania S. etc.—Terminalia B., Trigonella F., (erysipelatic) Triticum S.,—Vateria I. etc.

Influenza (Dustupratishyaya):—Cinnamomum C., Citrus B., Glycyrrhiza G., Hyssopus O., Sodium salts and preparations.

Insanity (Unmada):—Acorus C., Beninkasa C., Canscora D., Croton T., Datura A., Herpestis M., Hydrocotyle A., (dementia) Hyoscyamus N., Jasminum S., *Kushmanda ghrita.*, Lactuca S.

Insomnia (Nidranasha):—Cannabis S., Hyoscyamus N.,

Lactuca S., Lagenaria V., Myristica F., Papaver S., Sinapis J., (from over-fatigue) Strychnos N.
Intestinal Diseases.—See "Bowel Complaints."
Itches.—*Adityapaka Taila.*, Atalantia M., Bassia Lon. Carthamus T., Cassia O., (Dhobi) Cassia S., Rhinacanthus C., Cephalandra I., Cocculus S., Curcuma L., Emblica O., Euphorbia N. & Tir., Galega P., Hibiscus A., Jatropha C., Liquidamber O., Os Sepie and its preparations, Plumbum and its salts, Santalum A.
Jaundice. (Kumbha-Kamala):—Aegle M., Allium C., Boerhavia D., Calotropis G., Carthamus T., Citrullus C., Cocculus C., *Cowrie Bhasma.*, Curcuma L., Daucus C., *Dhatri Arista.*, *Dhatri Leha.*, Eclipta E., Emblica O., Flacourtia R., Fumaria O., *Gudashtaka.*, Holarrhena A., Hydrocotyle A., Hygrophila S., Jatropha Mon., *Krimidhulijalaprabha Rasa.*, Lawsonia A., Luffa E., Melia Azadi., Momordica C., Nardostachys J., *Patoladya Churnam.*, Peganum H., Phyllanthus species., *Pittantaka Rasa.*, *Punarnava Leha.*, *Punarnavasthaka Punarnava Taila.*, Rheum E., Rubia C., *Shankha Bhasma.*, Sphaeranthus H. etc, Stannum preparations., Styrax B., Taraxacum O. etc., Urine (cow's) and preparations., Urine (Ox's)., *Visamajvarantaka Lauha.*, Vitis V., *Yakridari Lauha.*
Kala-Azar.—Vitex P.
Kidney Diseases.—Hemidesmus I., (polyuria) *Laboobai Saghur.*, Michelia C., Ocimum species., Peteroselinum S., Piper species., Xanthium S., (irritable or inflammatory) Oryza S., (painful) Prunus Amyg., Portulaca species., (renal colic) Siegesbeckia O. etc.,—Viola species.

Laryngitis.—Cubeba O., Styrax B.

Leprosy (Mahakusta; Kustaroga) :—Alangium D., Alstonia S., Argemone M., Dipterocarpus T., Fumaria O., *Galithkasturi Rasa.*, Gloriosa S., Gynocardia O., Hydnocarpus I., & V., Hydrocotyle A., Indigofera A., Ipomoea T., Lawsonia A., Luffa A., *Magnesium gynocardate*, Melia Azadi. & M. Azeda., Mimosa Am. Momordica C., Nelumbium S., *Panchanimba Gutika.*, *Pancha Valkaladi Tailum.*, Peterospermum species., Plumbago species., Pongamia G., Semecarpus A., (locally) *Tamra Bhasma.*, Terminalia Cat. etc., Trichosanthes species., Urgina I. etc., Urine (Cow's) and preparations., Vernonia C. etc., Zingiber Z.

Leucoderma.—Aristolochia I., *Panchanimba Gutika.*, Psoralea C., Vernonia A.

Leucorrhoea (Pradaravata) :—Acacia A., Amaranthus Poly., Balsamodendron O., Berberis A., Cocculus C., Cubeba O., Curcuma Z., Daedalacanthus R., Dipterocarpus T., Emblica O., Ficus R., Flemingia T., Garcinia M., Geranium W., Glycyrrhiza G, Gracilaria L., Hemidesmus I., Hygrophila S., Ixora C., *Javarusauda*, Juniperus C., Lawsonia A., Lepidium S., Liquidambar O., Mangifera I., *Mashadi Modaka.*, Melia Azadi. Memecylon E., Mucuna P., *Musalyadi Churna.*, Myrtus C., *Pachanabheda Churna.*, Phaseolus species, Pinus species., Pistacia species., *Pradararipoo Rasa.*, Pterocarpus species., Quercus I., Rhus S., Sida C., *Somesvara Rasa.*, Spondias M. etc., Tamarix G. etc., Terminalia Cheb., Trapa B. etc., Trigonella F., *Valkala Kashaya*, *Vanari Vatika.*, Woodfordia E., Xanthium S., etc., Zinc salts and preparations.

Lithiasis.—Kalanchoe L., Salvadora species., Zea M.

Liver Affections.—(congestion) *Aghore Nrisimha Rasa.*, Amomum S., Casearia E., Sodium salts and preparations., Trichosanthes species., (enlargement) Canavallia E., Croton O., Euphorbia N., Ficus A., Gentiana K., Gymnema S., Ipomoea D., Jatropha G., Lawsonia A., Luffa E., Moringa P., Ostrea E. and preparations., Pinus species., Prunus Amyg., Pyrethrum I., Saline substances., Solanum I. & N., Sulphur and its preparations., Swertia C. etc., Terminalia Cheb., Trigonella F. (torpor) Cichorium I., Cocculus C., Cosmostigma R., Cyperus P., Euonymus., Ferula A., Hermodactylus G., Lycopersicum E., Pistacia species., Podophyllum E., Prunus Amyg.,—Citrullus C., *Cowrie Bhasma.*, Cuscuta R., Eclipta E., Ficus Benja., (obstructions) Ficus H., Fumaria O., Garcinia P., Gentiana K.,—(induration) Hyssopus O., Lactuca. S., *Lokanatha Rasa.*, Momordica C., Myristica F., Nelumbium species, Ocimum species., (bilious obstructions) Paeonia E.,—Phaseolus species., Portulaca species., Rumex C., Sodii B., Symplocos R. etc., (visceral) Taraxacum O., Viola species., Vitex N. etc., Woodfordia F.

Lock-jaw.—See "Tetanus."

Lumbago (Katgraha):—Areca C., Balsamodendron M., Citrus B., C., & L., Datura A., Euphorbia R., Peganum H., Shorea R., *Trayodasanga guggula.*, Triticum S., Withania S.

Lung Complaints:—(pectorals) Juniperus C., Liquidambar O., Myrica N., Portulaca species., Rourea S., Ruta G., (inflammation) Spinacea O., Stannum preparations.

Maggots—See "Ozaena".

Malaria (Vishamajvara):—(chronic) *Aghore Nrisingha Rasa.*, *Amritashtakapachana.*, *Ananda Bhairavi.*, Andropogon C., *Bindaal*, *Shadanga Paniya.*, Sida A., Strychnos C., etc., Swertia C., etc.—*Chanadya Lauha.*, Cocculus C., Eurycoma L., (with enlarged spleen) *Dhatrimodaka.*, *Jwaramurari Pills.*, Gentiana K., Helianthus A., *Majoonai Saul.*, *Panchathiktaka panakam Panchathiktaka powder.*, Sodium salts and preparations., Toddalia A., Vernonia C. etc., Vitex P., Xanthium S. etc.

Mammary Diseases:—(sore breasts) Peteroselinum S., (deficient secretions and sore nipples) Ricinis C., (sore nipples) Sodium salts and preparations., (breast inflammation) Aloe L., Datura A., Polyporous O.

Mania (Unmada):—Acalypha I., acute Cannabis S.,—Datura A., Helleborus N., Hyoscyamus N., (puerperal) Michelia C.

Marasmus.—Indigofera E.

Melancholia.—Crocus S., Ipomoea T., (mental troubles) Trichosanthes species.

Meningitis.—(spinal) Croton T.,—Sulphur and its preparations.

Menorrhagia (Raktapradara):—Amaranthus Poly., Bauhinia V., Cannabis S., Dalbergia Sis., Eriodendron A., Ficus G., Hibiscus Rosa S. Holarrhena A., *Jatiphaladi Churnam.*, Lawsonia A., Mangifera I., Mucuna P., Musa S., Myristica F., Nelumbium S., *Pradarari Lauha.*, Sesbania species., Trapa B. etc., Triticum S., *Vanari Vatika.*, Viscum A. etc., Xanthium S. etc.

Menstrual disorders:—See "Uterine Diseases."

Mercurial Salivation:—Acacia Catechu.

Mumps (Pashanagandhaba):—Datura A., Kaempforia R.

Myosis:—Ocimum species.

Myxoedema:—Tiriake F.

Nausea:—Cinnamomum C., Michelia C.

Nephritis (Vrikkasotha):—Cissampelos P., Cycas C., Physalis species.

Nervous Diseases (Vatavyadhi):—*Bala Taila.*, *Chaturmukha Rasa.*, *Chhagaladya ghritha.*, *Chintamani Chaturmukha.*. Ferula A., *Mashabaladi.*, *Masha Taila.*, *Narayana Taila.*, Nardostachys J., (irritability) Nicotina T., (weakness and exhaustion) Papaver S., Viverra C., Withania S. etc., Phaseolus species., Ricinis C., *Samiragaja Kesari.*, Semicarpus A., Sida C., (chronic) Smilax C. etc., (nervous fatigue). Sterculia A., Sulphur preparations. Vanda R., *Vishnu Taila.*, *Yogendra Rasa.*

Neuralgia (Sula):—Aconitum F. & N., Acorus C., Allium S., Amomum S., Andropogon M., Berberis A., Cannabis S., Cinnamum C., Citrus B., Crocus S., *Danawantri Tailum.*, Datura A., Hyoscyamus N., Ipomoea R., *Jatiphaladi Churnam*, Lavendula S., Melanleuca L., Mentha P., Moringa P., Myristica F., *Narasimha Churna.*, Papaver S., Phaseolus species., Prunus Amyg, Ptychotis A., Quinetum., Rosebay., Sinapis J., Sodium salts and preparations., Squalus C. preparations., Strychnos N., *Tribhuvan Keerti Rasa.*, Valeriana species., Zingiber O.

Neurasthenia:—Herpestis M., (excessive venery) Strychnos N., (cramps) Zingiber O.

Neuritis.—*Prabhanjana Vimardhana.*, Semecarpus A.

Night Blindness (Sleshmawidagdhadristu).—Lagenaria V., Momordica C.,

Night Sweats.—See "Phthisis."

Obesity (Medavriddhi).—See "Corpulence."

Oedema.—See "Anasarca."

Opacity of the Cornea.—Hedysarum A., Phoenix species., Ranwolfia S.

Ophthalmia.—(catarrhal and purulent).—Aloe B., Andropogon C.,—Aloe L., Barringtonia R., Berberis A., Cassia Absus., C., Auri., Curcuma L., Cynodon D., Emblica O., Euphorbia N., and R., Heliotropium I., Holostemma R., Michelia C., Mimosa P., Nerium O., Nymphoea species., Papaver S., Phaseolus species., Phoenix species., *Rasanjana.*, *Rasaut.*, *Rasaventi.*, Sida., C., (purulent) Sodium salts and preparations—Tabernamontana Species, Terminalia B.

Orchitis.—Altingia E., Bassia La., Caesalpinia B., Canabis S., Gossypium I., Holostemma R., Liquidambar O., (for causing emesis) *Madanadhi Vamana.*, Randia D., Vitex N., etc., Vitis V.

Otalgia.—Gynandropsis P., Illicium V., (Noise in ear with headache) *Mashabaladi* Kvatha.,—Moringa P.

Otorrhoea (Karnasrava).—Allium S., Alocasia I., *Apamarga taila.*, Arun C., Cleome V., Curcuma L., *Gulal.*, Helicteres I., Os Sepie and its preparations. Vitis Q. etc.

Ozaena (Peenash).—Centipeda O., Eucalyptus G., Hydrocotyle A., Ocimum species., Sodium salts and preparations., Squalus C. preparations., (locally) *Tamra Bhasma.*

Palsy (Oorustambha)—See also "Paralysis":— Capparis A., Euphorbia R., Ferula A., (facial) *Mashabaladi.*, *Mashabatadi Kvatha.*,—Myristica F., Peganum H., Semecarpus A., Strychnos N.

Pannus Cornea—See also "Eye Diseases".—Abrus P.

Paralysis (Pakshavata).—(general and facial) Allium S., Bala Taila.,—Celastrus P., *Chhagaladya Rasa.*, *Danavantri Tailam.*, *Ekangaveera Rasa.*, Ferula G., (Agitans) Hyoscyamus N.,—Ipomoea T., *Mashabaladi Kvatha*, *Masha Taila.*, Moringa P., Mucuna P., Myristica F., Orchis M., Phaseolus species., Piper species., Rubia C., Ruta G., Sapindas T.,—(of tongue Spilanthus O.,—Stannum preparations., Strychnos N., (facial) *Svalparasuna Pinda.*, Urgina I. etc, *Vanari Vatika.*, *Vataraktantaka Rasa*.

Paraplegia (Ardhitavayu).—*Astakatvara Taila.*, *Ekangaveera Rasa.*, Semecarpus A., *Svalparasuna Pinda.*, *Yogaraj Guggula.*

Parasites—See also "Worms".—(pediculi or lice) Cocculus S., (maggots in nose) Crataeva N., (noxious insects) Crinum D.

Parotitis—See "Mumps".

Parturition (Prasutivayu).—(delayed) Moringa P., (lying-in state) Ricinis C., (difficult and delayed labour) Sapindas T., *Saubhagya Sunti*, Sodii B.,

Periostitis—Indigofera P.

Pertussis—Lactuca S.

Phosphaturia (Ksharoncha).—*Chandraprabha Gutika.*, Tribulus T.

Photophobia.—Cannabis S.

Phthisis (Kshaya; Rajayakshama)—Beninkasa C., Borax.

sus F., Caesalpinia D., *Chaturmukha Rasa.*, *Chyavanaprasa.*, *Cowri Bhasma.*, (night-sweating) Adansonia D., Cocculus S., Plumbum and its salts., Polyporus O., Rosa species., Saccharum O.,—Emblica O., Flacourtia C., Gynocardia O., Hedyotis U., Hydnocarpus I., *Kanaka-Asava.*, Orchis M., (Dyspnoea) *Brihat kanchanabhra.*, *Kanchanabhra.*,—*Khanda kooshmanda.*, (tubercular) *Knysolgan* (page 961)., *Sacrocrysin.*, *Sanocrysin.*, *Sarvangasundara Rasa.*,—*Mriganka Rasa*, *Mukta Bhasma.*, Ostrea E. and its preparations., *Pottali Hemagarbha Rasa.*, *Rajamriganka Rasa.*, *Ratnagarbha pottali Rasa.*, *Ratnagiri Rasa.*, *Sringarabhra*, Strychnos N., Sulphur and its preparations., *Suryavartha Rasa.*, *Suvarna Bhasma.*, *Tamra Parpati.*, *Trailokya Chintamani Rasa.*, (locally) *Vasachandanadi Taila.*, *Vasakushmanda Kanda.*, *Vasava Leha.*

Piles (Arsha; Raktarsha):—Acacia S., Achyranthes A., Acorus C., Aegle M., *Agnimukha Lauha.*, Aleurites M., Allium C., Aloe B., Amaranthus Pani., Amorphophallus C., *Amrita Bhallataki.* Andropogon C., *Asari Lauha.*, (bleeding) Averrhoea C., Bauhinia V., Berberis A., Dalbergia Sis., *Dasamulakada.*, Galega P., Holarrhena A., Mangifera I., Mesua F., Momordica D., Nelumbium S., *Pittala Bhasma.*, Pongamia G., Pterocarpus species., Saraca I., Sesamum I., Shorea R., Sida C., Sphaeranthus H., Tamarindus I., Terminalia Cheb., Beninkasa C., Bertholletia E (Brazil nuts)., Cannabis S., Carica P., Casearia E., *Changeri ghrita.*, Cynodon D., Datura A., Dillenia I., Dioscorea B., Eclipta E., Embelia R., Eriodendron A.,

Euphorbia N., Ficus C., Gloriosa S., Gossypium I., Hedysarum A., Hibiscus P., Holarrhena A., Hypericum P., Indigofera Tinct., *Kumari Asava.*, Linum U., Lippia N., Luffa A., *Mana Suranadya Lauha.* Melia Azadi., Mimosa Am. & P., Momordica C., Myrica N., Myristica F., Nymphoea species,, (painful) Papaver S., Pavetta I.,—Phaseolus species,, Phoenix species., Piper species., *Pippali Arista.*, Plantago I., Plumbago species., Plumbum and its salts., Potassium salts. *Pranada gudika.*, Prunus Amyg., Pterocarpus species., Punica G., Quercus I, *Raphanus S.*, *Rasanjana.*, *Rasaut.*, *Rasavanti.*, Ricinis C., Salvadora species, *Samasarkara Churna.*, Semecarpus A., Sesamum I., (inflamed) Sodium salts and preparations., (locally) *Tamra Bhasma*, Terminalia B. and Cheb., Vitis V., Woodfordia F.

Pimples:—(on nose) Santalum A.

Pityriasis (Seithma):—*Bhringaraja Taila.*, Cassia S., Eclipta E., Mallotus P.

Plague (Maraka):—Serpent Poison preparations,, Tamarix G. etc.

Pleurisy:—Boerrahavia D.

Pleurodynia:—Citrus L.

Pneumonia:—Embelia R., Ferula A., Linum U., Quinine., *Tribhuvan Keerti Rasa.*

Poisoning (Stavarajangama Visham):—(Croton) Acorus C., (tobacco) Allium C., (morphine) Cocculus S., (datura) Oxalis C. (copper, arsenic—*somalavisha*, or corrosive sublimate):—Saccharum O., Triticum S., (of various sorts) Salvadora species., (opium) Saxifraga I., Strychnos N., (chronic arsenical) Semecarpus A.,

(narcotic) Sinapis J., Strychnos N., Valeriana species (lead) Strychnos N., (by venomous animals) Tiriake F., (by salts of mercury; zinc, silver, tin and iodide) Triticum S.

Prickly-heat:—Os Sepie and its preparations., Santalum A.

Prolapsus:—Garcinia M., Hypericum P., (ani) Psidium G., (recti) *Changeri ghrita.*, *Compound ghrita* Quercus I., Strychnos N., Viola species., (stricture) sulphur and its preparations., (uterus) Viola species.

Prurigo (Rakasa):—Cocculus S., Curcuma L., *Haridra-khanda.*, *Khadirastaka.*, *Somaraji Taila.*, (chronic) Urine (cow's) and preparations.

Pruritus (Alasaka):—Holarrhena A.

Psoriasis (Vicharchika):—Canarium S, Cassia S., Cephalandra I., Dipterocarpus T., Hibiscus P., Hydrocotyle A.

Pterygium:—Butea F.

Puerperal Diseases:—Pedalium M., (convulsions) Gardenia F.. Sodium salts and preparations., (diarrhoea) *Svalpa Methi Modaka.*, (fevers) *Panchaji-rakapaka.*, Vitex N. etc.

Pyaemia:—Quinine.

Pyelitis:—Liquidambar O., Santalum A.,

Respiratory Complaints.—Cocculus S., Ephedra V., Euonymus., Ocimum species., (painful) Pinus species., Solanum I., (nasal, throat, laryngeal and bronchial) Piper species., (catarrhs) Pistacia species.,—Plantago I., Randia D., Sinapis J., (spasmodic and phlegmatic) Sodium salts and preparations.,—*Sambharsing Bhasma.*, (locally) *Sambharsing paste.*, (chest diseases)

Sodium salts and preparations., (spasmodic) Ptycho. tis A., Strychnos N., Zingiber O.,—Tylophora A., (inflammatory) Verbascum T., (tightness of chest) Viola species.

Retching.—Sinapis J.

Retention of Urine (Mutraghata)—See "Anuria."

Rheumatism (Sandhivata; Amavata).—Aconitum F., and N., Acorus C., *Ajamodadi Churna.*, (acute) Alangium D., Camphora O., Cinchona C., *Prasarini Leha.*, Quinine., Vitex N. etc.—Allium S., (chronic) Andropogon I., Cocculus V. Gynocardia O., Hemidesmus I., Hydrocotyle A., Jatropha C., Myristica F., Papaver S., Pinus species, Saussurea L., Solanum, D., Squalus C. preparations., Strychnos N., Vateria I., etc., Zingiber O.,—Andropogon M., Asparagus O., and R., Balsamodendron M., Brassica J., Bryonia E., Cadaba I., Calophyllum A., Cannabis S., Cardiospermum H., (muscular) Carthamus T., *Chitra Kathi.*, Strychnos N., Terminalia Cheb.,—Cassia S., Celastrus P., Citrus Au, and B., Cocculus C., Colchicum L., Crataeva N., Crocus S., Croton T., *Dasamulakada*, Datura A., Belphinium D., *Dhanavantri Tailum.* Dodonaea V., Ephedra V., Erythrina I., Euphorbia A, and Tir., Farsetia A., Ferula G., (headache) Ficus Benja.,—Flacourtia R., and S., *Gandhaka Lepa.*, Gaultheria F., Gendarussa V., *Gokshuradi guggula.*, Gossypium I., Grewia A., *Guduchyadi Taila* Guizotia A., Hermodactylus G., Herpestis M., Holarrhena A., Hyssopus O., Illicium V., Ipomoea P., R., and T., *Ithrphal.*, *Kubja prasarini Taila*, Lavendula S, Lepidium S., Litsea S., Lycopodium C.,

(stiff.neck) *Mashabaladi Kvatha.*, Mattricaria C., Melanleuca L, Mentha P., *Methi Modaka.*, Michelia C., Mullugo C., Moringa P., Myristica M., Myrtus C., *Narayana Taila.*, Nicotina T., Nyctanthes A., Ocimum species., Paederia F., *Pancha Valkaladi Tailum.*, Pandanus O., Papaver S., Peucedanum species., Phaseolus species, Physalis species., Plantago I., Plumbago species., Pongamia G., Potassium salts., Ptychotis A., Pyrethrum I., Pyrus species., Randia D., Rosebay., Rourea S., *Saindhavadya Taila.*, Salvadora species., Sapindas T., *Sarveshvara Rasa.*, Semecarpus A., Sesbania species., Sida A., C., and R., Siegesbeckia O., etc.; *Sinhanada guggula.*, Smilax C., etc., Sodium salts and preparations., Solanum N., Soymida F., Strychnos N., Sulphur and its preparations., *Sunta ghrita.*, *Svalpa methi Modaka.*, Terminalia B., Tiriake F., Toddalia A., etc. *Tryodasang guggula.*, (gonorrhoeal) Tribulus T., *Triphala guggula.*,—Trigonella F., (articular) Triticum S., (syphilitic) *Somala Bhasma.*, Tylophora A.,—Urgina I. etc., Vanda R., *Vata guduchyadi Taila.*, *Vatavaktantaka Rasa.*, (pains) Vitex T. etc.,—Vitis V., *Vrihat Guduchyadi Taila.*, (with swellings) Withania S. etc, Xanthoxylum species., *Yogaraja guggula.*

Rickets.—Trigonella F.

Ringworm (Dadru)—See also "Skin Diseases.—Allium S., Butea F., Carica P., Cassia alata., S., & T., Cephalandra I., *Chakramardha.*, Cocculus S., Cocos N., Curcuma L., Embelia R., Euphorbia T., Ferula A., Hibiscus P., Jasminum Ang., & H., Mallotus P.,

Myristica F., Nerium O., Rhinacanthus C., Siegesbeckia O., *Somaraji Taila.*, Triticum S., Urine (horse's).

Salivation.—Mimusops E., Spilanthus O.

Scabies.—See "Itches" and "Skin Diseases."

Scalds.—See also "Burns"; "Blisters":—Basella A., Gossypium I., Mangifera I., Oryza S., Portulaca species., Sesamum I., Silicium salts., Terminalia Cheb. Triticum S.

Sciatica (Grodhrasee):—Allium S., *Astakatvara Taila.*, *Bala Taila.*, Brassica N., Cassia T., Citrus B., C., & L., Datura A., Euphorbia R., Gaultheria F. *Ithrphal.*, *Masha-baladi.*, Myristica M., Nyctanthes A., *Prabhanjana Vimardhana.*, *Saindhavadya Taila.*, *Svalparasuna Pinda.*

Scrofula.—Amaranthus Pani., (also tumours) Bauhinia, T, & V., Caesalpinia D., Clerodendron Inerme. Cocculus C., Echinops F., Eulophia V., (ulcers) Euphorbia A., Evolvulus A., Fumaria O., Galega P., *Gandhaka Lepa.*, Gracilaria L., Gynocardia O., Hydnocarpus I., Hydrocotyle A., *Kanchanara Guggula* Melia Azadi., and Azeda., Moringa P., Myrica N., Rumex C., Semecarpus A., Siegesbeckia O., etc., Solanum D., (abscesses) Squalus C. preparations., Sulphur and its preparations., Trigonella F., *Tryushanadi Lauha.*, (sores) Vitex N. etc, Withania S. etc., Xanthium S., etc., Zinc, salts and preparations.

Scurvy.—*Amchur or Ambose.*, Citrus Au., & B., Feronia F., Garcinia Pur., Indigofera E., Musa S., Nyctanthes A., Portulaca species., Psidium G., Raphanus S., Rourea S., Rumex C., Salvadora species., Solanum T., Spondias M. etc, Tamarindus I., (locally) *Vasa Chan-*

danadi Taila., Vitix Q etc.

Sinus (Nadivrana):—Jatropha G., Myrtus C., Vitex N. etc.

Skin Diseases.—Acacia C., Alangium D., Altingia E., *Balsam of Sulphur*., *Chakramardha Chaulmugra Ointment*., (chilblains) Citrus B., Shorea R.,—Cocculus C., (freckles) Cocos N., Cucumis Melo., Gossypium I., Mallotus P.,—Curcuma Am. & Aro., L., & Z., Cuscuta R., Embelia R., (chronic) Eucalyptus G., *Panchatikta ghrita*., Silicium salts., Sulphur and its preparations., Taraxacum O. etc., Urine (cow's and preparations, Vernonia A., & C. etc.,—Ficus R. Fumaria O., *Gandha Taila*., *Gandhaka Rasayana*., Gloriosa S., (measles) *Gorochanam* (page 1091). Guazuma T., *Guduchyadi Taila*., Gynocardia O., *Haridrakhanda*., Hemidesmus I., (scabies) Hibiscus P., Terminalia Cat. etc.,—Hydnocarpus I., Hydrocotyle A., Ichnccarpus F., Indigofera A. & Tinc., Ipomoea Cy., Jasminum G., *Kanchanara guggula*, *Karaviradya Taila*., *Khadirarishta*., *Khadirastaka*., Lawsonia A., Mallotus P. Melia Azadi., and Azeda., Mesua F., *Milk of Sulphur*., Nelumbium S., Nerium O., Nigella S., *Nirgundi Oil*., Nyctanthes A., (excessive sweating) Ochrocarpus L.,—Ocimum species., (inflammatory affections) Oryza S., Zinc salts and preparations., (excrescences) Oxalis C., (irritable surface) Plantago I.,—Plumbago species., Plumbum and its salts., Pongamia G., (eruptions) *Lait Virginal*., Portulaca species., Prunus Amyg. Rumex C., Santalum A., Sesbania species. (eruptive) *Prithvisara Taila*., Styrax B.,—Psoralia C., Pterocarpus M., (obstinate) *Ramaban Rasa*., Rhus S.,

(burning of skin and body-heat) Rosa species.,—Rourea S., Rubia C., Santalum A., Saussurea L. Sesamum I., (excoriations, cracks, fissures etc.) Sevum preparatum.,—Shorea R., (parasatic eruptions) Siegesbeckia O., etc., *Sinduradya Taila.*,—Sodium Salts and preparations., Solanum D. & N., *Somaraji Taila.*, Sphaeranthus H. etc., Squalus C. preparations., Stannum preparations., Sulphur and its preparations., Tabernamontana species., (locally) *Tamra Bhasma.*, Terminalia A. Cat. and Cheb., Trichosanthes species., (tetter and lesions) Triticum S.—Urgina I. etc., *Utpaladi Sritam.*, *Vata guduchyadi Taila.*, (syphilitic) Vitex N. etc.,—*Vrihat guduchyadi Taila.*, Withania S. etc., Zinc salts and preparations., Zingiber Z.

Sleeplessness—See "Insomnia".

Small-Pox.—Agati G., Asparagus R., Curcuma L., Fagonia A., *Gorochanam* (page 1091)., Lens E., Melia Azeda., Plumbum and its salts.

Snake-Bites.—Althaea O., Amaranthus Poly., Dodonaea V., Eclipta E., Euphorbia N. and T., Flacourtia S., Gardenia F., Gloriosa S., Gymnema S., Heliotropium E., Hibiscus A., Hugonia M., (Phursa) Nerium O.,—Ophiorrhiza M., Pericampylus I., Salvadora species., Strychnos N.

Sore eyes.—See "Eye diseases".

Sores.—(Bed-sores and sores on lips) Areca C., (Delhi) Balsamodendron M.,—Beta V., Cassia O., Cephalandra I., Cleome V., Crocus S., Erythrina I., Heliotropium I., and S., Hibiscus P., (phagedenic and foul) Hydnocarpus I., Ixora C., Mangifera S., Mentha S., (irritable) Prunus Amyg.,—Pterocarpus M.,—

(gangrenous) Siegesbeckia O. etc., Vitex N. etc., (in ears and nostrils) Trichosanthes species., (foetid and scrofulous) Vitex N. etc.

Sore-throat.—Acacia A., Allium C., Alstonia S., Balsamodendron My., Capsicum A., Coriandrum S., Eugenia J., Feronia E., Glycyrrhiza G., Ixora C, (sore mouth and tongue) Pistacia species., (relaxed) Punica G., Quercus I.—(chronic) Pyrus species.—Rosa species., Spinacea O., Tamarindus I., Terminalia B.

Spermatorrhoea (Sukramcha).—Cassia Aari., Ficus B., Holostemma R., Lactuca S., Lawsonia A., *Makaradhvaja*, Mucuna P., Parmelia P., Saccharum O., Sida C., Stannum preparations., Strychnos N., Terminalia A. etc., Tribulus T., Withania S. etc.

Spleen Complaints.—(Enlargement)—*Abhaya Lavana.*, *Abhra Bhasma.*, Abies W., Allium C., Cichorium I., Cinchona C., Citrus B., *Cowrie Bhasma.*, Eugenia J., Euphorbia N., Ficus A., Flacourtia R, Gardenia G., Gentiana K., Gymnema S., Hermodactylus G., Ipomoea D., Jatropha G., Lawsonia A., Luffa A. and E., Melia Azeda., Moringa P., Ostrea E. and its preparations, *Panchakola Churnam.*, Potassium salts., Prunus Amyg., Punica G., Pyrethrum I., Quinetum. Saline substances., Salvadora species., Semecarpus A., Sesbania species. Solanum I. and N., Sulphur and preparations., Swertia C. etc., Terminalia Cheb., Trigonella F., Viscum species., Vitex N. and T.—Aloe L, Cocculus C., (induration) Hyssopus O.,—*Jvarasani Rasa.*. *Kapardaka Bhasma.*, *Rohítaka Lauha.*, *Sambuka Bhasma.*, *Shanka Bhasma.*, *Sukti Bhasma.*, *Yakridari Lauha.*—(torpid) Prunus Amyg.

Splenitis.—See "Spleen Complaints".

Sprains.—Cicer A., Croton O., Curcuma Aro., Garcinia, P., Gynandropsis P., Hibiscus P., Myristica F., Paeonia E., Papaver S., Plumbum and its salts. Vitex T.

Sprue.—Holarrhena A., Musa S., Terminalia A. etc.

Stammering.—Spilanthus O.

Sterility.—Asparagus R., Ficus R., Mimusops E., Pandanus O., *Phalaghrita*. Putranjiva R., Withania S. etc.

Stiff-Neck (Manyastambha).—Asparagus R., *Mashabaladi Kvatha*.

Stings—See "Bites".

Stomach Complaints.—*Kalyanaksharam*., (gastrodynia) Nardostachys J., (gripes) Nicotiana T., (irritability) Ochrocarpus L., Ocimum species., Santalum A., (inflammatory) Oryza S., (ache) Cuscuta R., Zingiber O., (catarrh) Phaseolus species., (disorders) Quinetum.

Stomatitis (Mukhapaka; Mukharoga).—Balsamodendron My., Emblica O., (parasitic) Sodium salts and preparations.

Stone in the bladder—See "Calculi".

Strangury (Mutrakrachha)—See also "Ardor Urinae"—Abutilon I., Allium C., Amaranthus Pani., Boerhavia D., Bombax M., Citrullus V., Clitoria T., Cucumis S., Erythrina I., Gossypium I., Hemidesmus I., Hibiscus Rosa S., and Sub., Linum U., Oxalis C., *Punarnava Leha*., Saccharum O., Scilla I., Sida C., Vernonia C. etc.

Sunstroke (Suryabhighatajanyamoorcha).—Cucumis S.

Sweating:—(excessive) Ochrocarpus L., (Profuse) Santalum A.

Swellings :—Kaemferia R., (hands and feet) Nigella S., Ocimum species.—Plantago I.,

Syphilis :—Acalypha I., Adansonia D., Agave A., Alangium D., *Amrita guggula.*, Argemone M., Balsamodendron M., Bryonia E., Calotropis G., *Chandrodaya Rasa.*, Clerodendron Inerme., (secondary) Cocculus C., Gynocardia O., Plumbago species., Vanda R., (cachexia) Cocculus V., Smilax C. etc., Delphinium D., *Davakusumadi Rasa.*, Dioscorea B., Echinops E., Eclipta E., Ephedra V., Erythrina F., Evolvulus A., Fumaria O., Hemidesmus I., Hydrocotyle A., Ichnocarpus F., Indigofera A., *Kaisara guggula.*, *Kanchanara guggula.*, Melia Azadi., *Narasimha Churna* (eruptions) *Nirgundi Oil.*, Rourea S., Rumex C., *Salvarsan.*, *Saptasali Vati.*, Semecarpus A., Siegesbeckia O. etc., Silicium salts., Solanum D., *Somala Bhasma.*, *Suvarna.*, *Vasanta Malti.*, *Triphala guggula.*, (syphilitic rhematism) Tylophora A., *Vatari guggula.*, Vitex N. etc., Zinc salts and preparations.

Taenia :—Beninkasa C., Gisekia P., Gynocardia O., Mallotus P.

Tenesmus :—Gossypium I., Sida C.

Tetanus (Dhanustambha):—Eclipta E., Nicotiana T., Tiriake F.

Thirst (Trasna):—(in fevers) Kyllingia T.

Throat Affections (Kantharoga)—See also "Sore Throat." :—Altingia E., Feronia E., Hordeum V., Pandanus O., Rosa species. Zingiber O., (pectoral complaints) Zizyphus J. etc.

Thrush.—Sodium salts and preparations.

Tonsillitis (Galagraha; Kanthasaluka).—(acute) Cincho-

na C.,—Garcinia M., Phyllanthus species., (enlarged tonsils) Quercus I., Rosa species.

Tooth Complaints (Dantaroga).—Argemone M., Cinnamomum C., Datura A., Delphinium D., Embelia R., Erythrina I., Euphorbia A., and Tir., Ferula A., Ficus B., Gardenia G., Holarrhena A., (loose teeth) Mimusops E., (caries) Moringa P., Pistacia species.,—Myristica M., Ochrocarpus L., Paederia F., Papaver S., (ache) Piper species., Pistacia species., Pterocarpus M., Rumex C., Sinapis J., Solanum I., Spilanthus O., Tabernamontana species., Xanthoxylum species., (to strengthen teeth and gums) Salvadora species., (teething among children) Saxifraga L.

Tuberculosis—See "Phthisis".

Tumours (Gulma).—(malignant) Anona S., (scrofulous) Bauhinia T. and V., (cheloid) Cassia T.,—Fagonia A., (abdominal) Ostrea E., and its preparations; Saline substances.,—Papaver S., Salvadora species., Saussurea L., Sphaeranthus H.

Typhoid Fever—See also "Fevers".—(for Diarrhoea) *Anandabhairava Rasa.*, Oxalis C., Sodium salts and preparations.

Typhus Fever.—Gynandropsis P.

Ulcers.—See also "Sores".—Balsamodendron M., and O., Bambusa A.; Borassus F., Boswellia G., Calotropis G., Capparis A., Cassia O., Careya A., Carthamus T., (foul) Cassia T., Cocculus S., Eucalyptus G., Euphatorium A., Gardenia G., Holarrhena A., Melia Azadi., Pongamia G., Saccharum O., Styrax B., Woodfordia F.,—Cedrus D., Curcuma L., Cyperus R., Diospyros M., Dipterocarpus T., Eucalyptus G.,

(scrofulous) Euphorbia A.,—Euphorbia N., Execaria A., (indolent) Ferula O., Lens E., Lippia N., Styrax B., Tamarindus I., Terminalia T., etc.,—Ficus R., Galega P., Garcinia Pur., Gossypium I., Hemidesmus I., (chronic) Jatropha G., Terminalia Cheb., (small-pox) Lens E.,—Mangifera S., from burns) *Manjishtadya ghrita.*, Myristica M., Myrtus C., (gastric and duodenal) Oryza S., (Plain and irritable) Papaver S., Pedalium M., Phyllanthus species., Pinus species., *Prithvisara taila.*, Punica G., Rourea S., Rubia C., Saussurea L., Sesamum I., *Shankha Bhasma.*, Shorea R., (syphilitic) Adansonia D., Nerium O., Silicium salts., (sloughing) Sodium salts and preparations., Tamarix G., Squalus C. pre parations., Terminalia A. etc., Trichosanthes species., (hollow) Triticum S., Vateria I., etc., (obstina te) Withania S. etc., Zizyphus J. etc.

Urethral Diseases.—Cordia Myxa., Elephantopus S., Hibiscus P., (urethritis) Pinus species., Pongamia G., *Prameha mihira Taila.*, Sodium salts and preparations.,—Siegesbeckia O. etc.

Uric Acid Diathesis (Sikatameha)—See "Gout".

Urinary Complaints.—(irritability) Althaea O., *Changeri ghrita.*, Potassium salts., *Prameha Mihira Taila.*, Ricinis C., Strychnos P., Vitex N. etc., Zea M. etc.,—Cissampelos P., Cocculus C., Cocos N., (genital) Coriandrum S.,—Cucumis melo and S., Cucurbita M., *Gochurathi Churnam*, *Gokshuradyava Leha.*, Grewia W., Hedysarum A., Hemidesmus I., Herpestis M., (catarrh) Hordeum V., Pistacia species.,—Hyoscyamus N., Malva S., (polyuria) *Laboobai Saghur.*, *Mehamudgara Rasa.*, Melia Azadi., Mimosa P., Pedalium M.,

Physalis species., Portulacca species., (painful) Prunus Amyg.,—Raphanus S., Saccharum O., Sodium salts and preparations., (scalding urine) Sida R., Tamarindus I., (calculi) Spinacea O., (retention) Strychnos N., (incontinence) *Majoonai Kuvathiabah.*, Strychnos N., Styrax B.,—*Sulachanamritabhra.*, Terminalia Cheb., (bloody urine) Tribulus T.

Urticaria (Sitapitta).—Curcuma L., *Haridrakhanda.*

Uterine Diseases.—*Asoka Ghrita.*, Crocus S., (menstrual derangement) Curculigo O., Dolichos Bif., (haemorrhages) Eclipta E., (during gestation) *Utpaladi Sritam.*, (catarrh) Ferula G., Urtica D., (discharges) Punica G., Styrax B.,—Glycyrrhiza G., Gossypium I., Grangea M., Holarrhena A., (prolapsus) Hypericum P., Myrtus C.,—Nigella S., Paeonia E., Papaver S., Pedalium M., Peteroselinum S., Peterospermum species., (irritability) Potassium salts., Punica G.,—Saraca I., Symplocos R., Tribulus T., Viburnum F.

Uvula.—(elongation) Allium S., (uvulitis) Phyllanthus species., (relaxed) Symplocos R.

Vaginismus.—Zingiber O.

Venereal Diseases.—See also "Syphilis".—Indigofera E., Semecarpus A.

Vertigo (Nandavayu).—Coriandrum S.

Vomiting (Chhardhi).—Bergera K., Brassica A., Cinnamomum C., Citrus B., & L., Cyperus R., Hemidesmus I., Mentha P., (bilious) Mentha S.,—Plumbum and its salts., (obstinate) Silicium Salts.,—Sinapis J., Terminalia Cheb., Tiriake F., Zingiber O.

Warts (Masaka).—Anacardium O., Carica P., Euphorbia A., Oxalis C., Semecarpus A., Urgina I. etc.

White Ants.—Melia Azadi.

Whitlows.—Crinum D., Euphorbia A.

Whooping Cough.—Cannabis S., Eucalyptus G., Euphorbia N., and Tir., Ferula A., *Gorochanam* (page 1091)., Pongamia G., Sinapis J., Tylophora A., Zinc salts and preparations.

Womb Diseases.—See "Uterine Diseases".

Worms:—Acalypha I., Acorus C., Aleurites M., Alocasia I., Aloe B., Alstonia S., Andropogon C., Dillenia I., Embelia R., Potassium salts., (round & tape) Areca C., (tape) Ammonium embelate (page 324)., Argemone M., Cocos N., Cucurbita M., Garcinia P., *Kamala powder.*, Mallotus P., Punica G.,—Aristolochia B., Artemesia A., (thread) Bambusa A., Gisekia P., Sodium salts & preparations., Quassia E.,—Bauhinia V., Blumea B., Butea F., (round) Allium S., *Bhoonimbadi Churnam.*, Carica P., Cleome V., Colycopterus F., Cyperus P., Gardenia G., Gynandropsis P., Hyssopus O., Mangifera I., Mucune P., Vernonia A., (ankylostoma) Ceropegia B., Spinacea O.,—Citrus A., Cyperus R., Daemia E., (guinea) Datura A., Vernonia C. etc.—Eclipta E., Emblica O., Erythrina I., Eulophia V., Gloriosa S., Holarrhena A., Melia Azadi., Saline substances., Sida A., Sodium salts & preparations., Urine (horse's).—Euphorbia T., Ferula A., Helleborus N., (round & thread) Holarrhena A.—*Kitamarda Rasa.*, *Krimighatini Gutika.*, *Krimimudgara Rasa.*, Luffa E., Mallotus P., Melia Azeda., Moringa P., Nigella S., Picrorrhiza kurroa., Piper species., Ptychotis A., Pyrethrum I., Quassia E., Ruta G., Sapindas T., Sesbania species., Solanum I.,

Sphaeranthus H., Strychnos N., Sulphur and its preparations., Tabernamontana species., Terminalia Cheb., Trichosanthus species,, Urine (Ox's), Vernonia C., etc., (haematinic) *Vidanga Lauha*, Vitex N. etc., Zingiber Z.

Wounds (Salbovrana):—Arum C., Balsamodendron O., (contusions & bruises) Coscinum F., Crocus S., Curcuma Aro. & Z., Papaver S., Plumbum & its salts., Terminalia A. etc.—Desmodium T., Fagonia A., *Friar's Balsam* (page 829)—(bruises) Garcinia P., Hibiscus P., Mentha S., Paeonia E., Potassium salts., (maggots) Hydnocarpus I.,—Kaempferia R., Oryza S., (abrasions) Potassium salts., Zinc salts & preparations.—Saussurea L., Sesamum I., (caused by poisoned arrows) Spondias M., etc.—Sterculia A.,—(cuts) Styrax B.—Woodfordia F., Zinc salts & preparations.

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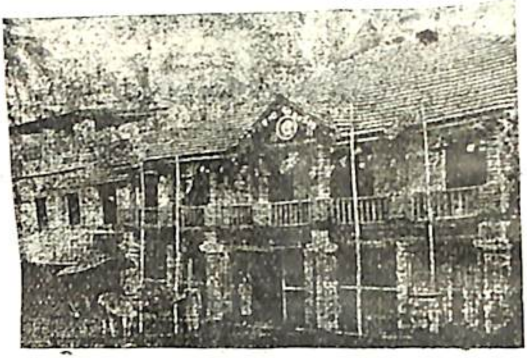

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